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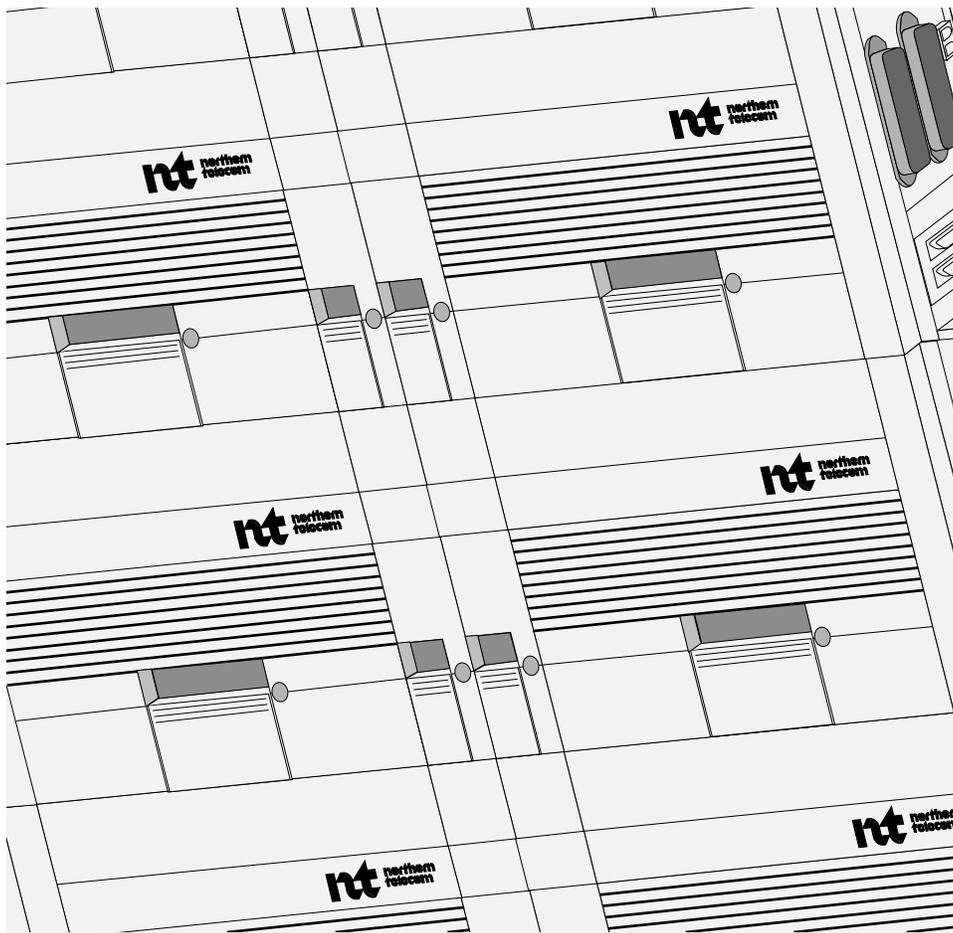
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SONET Products

AccessNode

Series 800A Outside Plant Cabinet Installation

Issue 1.0 February 1999



NORTEL
NETWORKS™

SONET Products

AccessNode

Series 800A Outside Plant Cabinet Installation

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June 1998

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- graphics and procedures for cabinet lifting failure
- procedure for adjusting LVD potentiometer

September 1997

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About this document

Scope

This document contains the information required to install and maintain an AccessNode Series 800A cabinet.

Installation charts contain step-by-step procedures to perform the following:

- mount the cabinet
- install AccessNode equipment
- install peripheral equipment
- wire and cable internal and external terminations

This document aids in the installation and maintenance of the Series 800A AccessNode cabinet and is intended for the following groups:

- strategic and current planners
- provisioners
- transmission engineers
- network administrators
- outside plant personnel

What this document contains

The document describes the following items:

- mechanical cabinet installation
- general information on the AccessNode equipment
- different installation configurations
- routine preventive maintenance requirements

Procedures are presented in a specific order to ensure that the cabinet and equipment are installed and maintained properly.

How to use this document

This document is a reference work. It provides high-level nontechnical descriptions of the cabinet and equipment.

Some of the topics included in this manual are discussed in greater detail in other parts of the AccessNode documentation set. In such cases, this document contains references to those sources of detailed information.

References in this document

This document refers to the following documents:

Engineering, Configuration, and Ordering Guide, Volume 1

- *Engineering and Ordering*, 323-3001-032
- *Site Installation Planning and Engineering*, 323-3001-200

Description, Volume 2A

- *Configuration and Equipment Description*, 323-3001-100
- *Signal Flow and Circuit Pack Description*, 323-3001-102

Commissioning and Testing, Volume 3

Separately bound document

- *Series 800A Outside Plant Cabinet Description*, 323-3001-118

Other documentation outside the AccessNode documentation suite

- Interconnect Schematic, IS1W00, S800A drawing
- *MPR-25/MPR-15 Series Single Phase -48V 25A Switched Mode Rectifier (M5C06) Equipment Installation and Maintenance Manual*, 169-2071-500, published in Nortel Power Systems documentation

Abbreviations for the colors of conductor jackets in cables

In this document, a uniform system of abbreviations is used to represent the colors of the conductor jackets used in equipment cables. These abbreviations take the form:

<pair_color> <group_marker_type> <group_marker_color>

Item	Abbreviation
<pair_color>	<p>This is the background color of the conductor insulation which indicates the pair color.</p> <p>BL blue (pair 1 of the binder group)</p> <p>O orange (pair 2 of the binder group)</p> <p>G green (pair 3 of the binder group)</p> <p>BR brown (pair 4 of the binder group)</p> <p>S slate (pair 5 of the binder group)</p>
<group_marker_type>	<p>This is the type of group marker used on the conductor insulation.</p> <p>1 single dots spaced about 18 mm (3/4 in.) apart</p> <p>2 two dots spaced about 3 mm (1/8 in.) apart with about 18 mm (3/4 in.) between each pair of dots</p> <p>3 dashes about 3 mm (1/8 in.) long spaced about 18 mm (3/4 in.) apart</p> <p>none one colored stripe on conductor jacket</p>
<group_marker_color>	<p>This the color of the dot, dots or the stripe used as the group marker on the conductor insulation.</p> <p>W white (binder group 1)</p> <p>R red (binder group 2)</p> <p>BK black (binder group 3)</p> <p>Y yellow (binder group 4)</p> <p>V violet (binder group 5)</p>

For example, the abbreviation BL 2W (representing Pair 1 of the second 25-pair binder) means that the conductor has a blue insulation background with two white dots spaced 18 mm (3/4 in.) apart. The abbreviation BL W (representing Pair 1 of the first 25-pair binder) means that the conductor has a blue insulation background with a single white stripe.

Installing the pad

This chapter contains procedures for the site preparation and installation of the AccessNode Series 800A cabinet. The chapter gives information for:

- planning site selection and preparation
- determining cabinet placement
- preparing the cabinet mounting pad
- pouring the concrete

How to use this chapter

In the following table, you will find a list of the procedures to install the concrete pad for the AccessNode S800A Outside Plant cabinet. Perform the procedures in the order listed. If you cannot successfully complete these procedures, contact your next level of support.

Chapter task list

This chapter provides the procedures for the tasks presented in the table below.

Task	See
Preparing the poured-in-place cabinet mounting pad	Procedure 1-1 on page 1-8
Pouring the concrete	Procedure 1-2 on page 1-23

Site selection and preparation

You can install the Series 800A cabinet in any suitable location; however, you should consider the acoustical noise level at the site and the surrounding terrain.

Acoustical noise

Sites with vegetation and landscaping typically absorb more of the incremental noise from the cabinet's equipment and environmental controls.

A hard site is defined as a cabinet or pad installation on a paved concrete surface such as a roadway or parking lot. Grass, trees and bushes typically render lower noise readings than those for a hard site.

Table 1-1 shows the acoustical noise specifications for the S800A cabinet at a hard site installation.

Table 1-1
Acoustical noise specifications

Measured from	At distance of 10 ft (3.048 m)	At distance of 20 ft (6.096 m)
With heat exchanger roof		
Sides (front/rear)	≈57 dBA	≤52 dBA
Ends	≈55 dBA	≤51 dBA
With air induction roof		
Sides (front/rear)	≈58 dBA	≤52 dBA
Ends	≈50 dBA	≤48 dBA

Pad preparation

Nortel Networks recommends that you mount the S800A on a concrete pad.

Locate the pad above local flood plains to minimize the likelihood of damage from adverse traffic and environmental conditions.

Consider the following items when preparing the site for the pad:

- soil conditions suitable to support the weight of the cabinet and concrete pad (reference local building codes)
- commercial power service availability to provide the ac power input for the S800A cabinet as shown in Chapter 3, "Connecting commercial power" in this practice
- cabling accessibility

Pad applications

Excavated pad application

For excavated pads, locate and excavate a hole for the pad and cable conduits.

The recommended pad dimensions in heavy frost areas is 90 inches long (228 cm) by 50 inches (126 cm) wide by 60 inches (152 cm) deep.

When the excavation is specified by local construction codes, the minimum depth recommended is 12 inches (305 mm) or as specified by local codes.

Floating pad conditions and constraints

The floating pad arrangement is suitable where the conditions and constraints listed below apply; however, the final design is the responsibility of the operating company, contingent on specific local code requirements:

- Soil conditions support the weight of the cabinet and concrete pad
- The area is free of heaving due to frost.
- The pad is reinforced with steel rods or mesh to prevent cracking and subsequent loss of the anchor bolts.

Pad drawings

The cabinet can be placed on a precast or poured-in-place concrete pad. Figure 1-1 on page 1-7 shows the trade size conduit usage and pad placement. Table 1-2 lists the precast pads and their corresponding reference drawings.

Verify the drawing numbers in Table 1-2 against the numbers included in the installation kit from Nortel Networks.

Table 1-2
Concrete pad options and drawings

For this concrete pad	Refer to	Drawing number
Load box, elevated, wide	Figure 1-2 on page 1-10	P0729561
Load box, elevated, narrow	Figure 1-3 on page 1-11	P0729558
Load box, flat, wide	Figure 1-4 on page 1-12	P0743184
Load box, flat, narrow	Figure 1-5 on page 1-13	P0743183
Power pedestal, elevated, wide	Figure 1-6 on page 1-14	P0743297
Power pedestal, elevated, narrow	Figure 1-7 on page 1-15	P0729559
Power pedestal, flat, wide	Figure 1-8 on page 1-16	P0743255
Power pedestal, flat, narrow	Figure 1-9 on page 1-17	P0743185

Pad installation

Typically, the cabinet is mounted on a poured concrete pad with buried power and telephone cables passing up through the pad into the bottom of the cabinet via cabling conduit.

Anchor plate kits

To facilitate placement, optional anchor plate kits are available as shown in Table 1-3. Each kit consists of an 11-gauge galvanized anchoring template assembly with anchor bolts and temporary support angles.

Table 1-3
Anchor plate kits and drawings

For this anchor plate kit assembly	Refer to	Drawing number
Load box, wide	Figure 1-10 on page 1-18	EV7A52FA
Load box, narrow	Figure 1-11 on page 1-19	EV7A52CA
AC pedestal, wide	Figure 1-12 on page 1-20	EV7A52GA
AC pedestal, narrow	Figure 1-13 on page 1-21	EV7A52DA

Cable entry

The S800A cabinet is constructed with cable conduit entry ports located at the bottom of the end compartments of the cabinet.

Note: All trade sizes listed are based on Schedule 40 PVC.

Termination compartment

The termination compartment has four 4.50-inch inside diameter (ID) openings for 4.00-inch trade size conduit, and one 2.00-inch ID opening for 1.50-inch trade size conduit. See Table 1-4 on page 1-5.

Table 1-4
Termination compartment conduit openings

Opening size	Conduit trade size	Function
4.50 inches (11.43 cm)	4.00 inches (10.16 cm)	VF–pairs 1–600 cable entrance
4.50 inches (11.43 cm)	4.00 inches (10.16 cm)	VF–pairs 601–1200 cable entrance
4.50 inches (11.43 cm)	4.00 inches (10.16 cm)	VF–miscellaneous cable entrance
4.50 inches (11.43 cm)	4.00 inches (10.16 cm)	VF–HF or fiber cable entrance
2.00 inches (5.08 cm)	1.50 inches (3.81 cm)	Ground-earth ground rod connection entrance

AC load box option

The ac load box option has two 3.00-inch ID openings for 2.00-inch trade size conduit and a 1.00-inch ID opening for 1.00-inch trade size conduit for grounding (see Figure 1-1 on page 1-7).

The ac power enters the S800A cabinet via conduit holes located on the bottom left side of the ac power compartment.

Table 1-5 shows the conduit openings in the ac load box.

Table 1-5
AC load box conduit openings

Opening size	Conduit trade size	Function
3.0 inches (7.62 cm)	2.0 inches (5.08 cm)	Miscellaneous–dc feed, when required
3.0 inches (7.62 cm)	2.0 inches (5.08 cm)	AC entrance–commercial ac feed
1.5 inches (3.81 cm)	1.0 inches (2.54 cm)	Ground-earth ground rod connection entrance

1-6 Installing the pad

AC power pedestal

For cabinets equipped with the optional attached ac power pedestal, there is a 3.50-inch ID opening for 2.50-inch trade size conduit for ac supply and four 2.00-inch ID openings for 1.25-inch trade size conduit for miscellaneous cabling and grounding as required (see Figure 1-1).

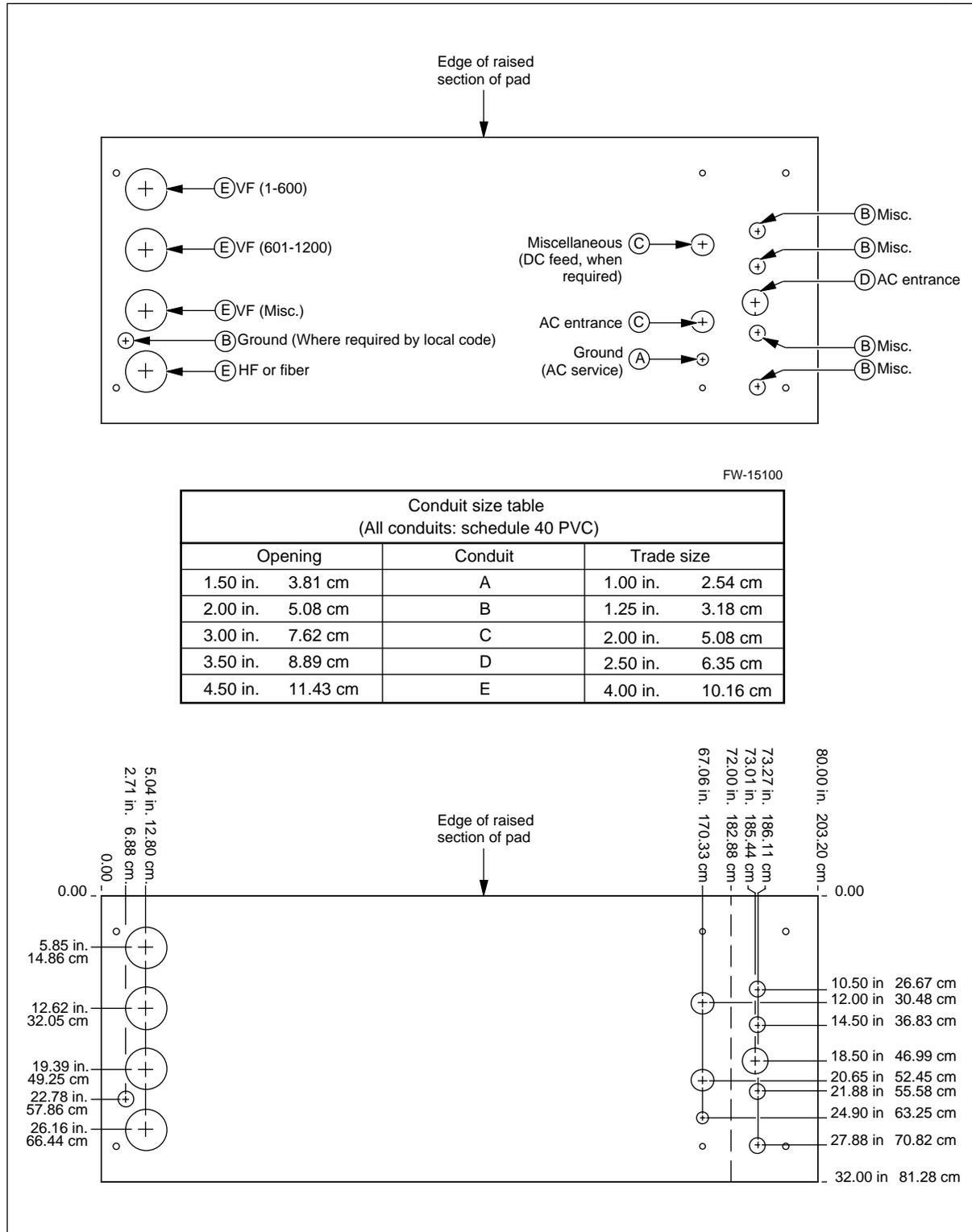
Table 1-6 shows the conduit openings in the ac power pedestal.

Table 1-6
AC power pedestal conduit openings

Opening size	Conduit trade size	Function
3.50 inches (8.89 cm)	2.50 inches (6.35 cm)	AC entrance—commercial ac feed
2.00 inches (5.08 cm)	1.25 inches (3.18 cm)	Miscellaneous—dc feed or grounding
2.00 inches (5.08 cm)	1.25 inches (3.18 cm)	Miscellaneous—dc feed or grounding
2.00 inches (5.08 cm)	1.25 inches (3.18 cm)	Miscellaneous—dc feed or grounding
2.00 inches (5.08 cm)	1.25 inches (3.18 cm)	Miscellaneous—dc feed or grounding

Figure 1-1
Trade size conduit usage and placement

FW-15100



Procedure 1-1

Preparing the poured-in-place cabinet mounting pad

The anchor plate assembly kit is required for construction of the pad conduit. Refer to *Engineering and Ordering*, 323-3001-032, in the *Engineering, Configuration and Ordering Guide*, Volume 1, for ordering information.

This procedure applies to the following types of pad arrangements:

- standard raised
- adjacent attached pedestal
- remote pedestal
- standard wide pad

Prerequisites for installation

The operating company is responsible for the choice of site and compliance with local regulations such as the applicable electrical codes, right-of-way easements, and noise requirements.

Installation procedures assume the following:

- The cabinet concrete pad is to be installed above local flooding levels.
- A minimum clearance of 32 inches (81 cm) is required on all sides of the cabinet for door clearance.
- All hardware and materials are available, and have been checked for completeness and readiness for the installation.
- All the required drawings, local installation instructions, job specifications, and other documentation are available and ready for use.

Tools required

A spirit level tool is required.

Materials (concrete forms as required)

- 2x8s (cut exactly 6 inches wide)
- 2x6s (cut exactly 4 inches wide)
- double-headed nails (to make form removal easier)
- miscellaneous braces and stakes (1x2s and 2x2s as required)
- 10 gauge x 6-inch spacing of welded wire mesh (for concrete reinforcement)
- reinforcing rods (#4x10-inch spacing) when required

—continued—

 Procedure 1-1 (continued)

Preparing the poured-in-place cabinet mounting pad

Action

Step	Action
1	<p>Assemble the form as per the pad arrangement to be installed. Refer to Figure 1-2 on page 1-10 through Figure 1-9 on page 1-17 for pad layouts.</p> <p>Note: Make sure that all wood is cut to the exact dimensions. It is especially critical that the 2x6s are ripped to the exact four-inch height so that the raised portion of the anchor plate fits properly.</p>
2	Place and level the form as required by the site plans.
3	<p>Erect the anchor assembly as per the anchor kit to be installed. Use Figure 1-10 on page 1-18 through Figure 1-13 on page 1-21 as you assemble the anchor plate kit.</p> <p>The assembly consists of:</p> <ul style="list-style-type: none"> • galvanized steel plate, 11-gauge • anchoring bolts, 5/8-inch diameter (16 mm) • temporary angle supports • plastic caps to protect the bolt threads
4	Place the reinforcing welded wire mesh inside the form (see Figure 1-14 on page 1-22).
5	Level the top of the form.
6	<p>Place the anchor plate assembly on top of the form and secure it in place by nailing the angles to the form.</p> <p>Note: Use the plastic caps provided to protect the anchor bolt threads.</p>
7	<p>Position the cable ducts through the conduit template openings (see Figure 1-1).</p> <p>Note: Conduits should extend at least two inches (51 mm) above the anchor assembly when possible, and should be plugged to prevent concrete from entering the conduit.</p>
8	<p>Add bracing supports along the length of the form to keep it square against the anchor plate and prevent bowing when the concrete is poured (see Figure 1-14).</p> <p>Note: Keep the conduit vertical while the concrete is poured.</p>
9	Continue the pad installation by performing Procedure 1-2.

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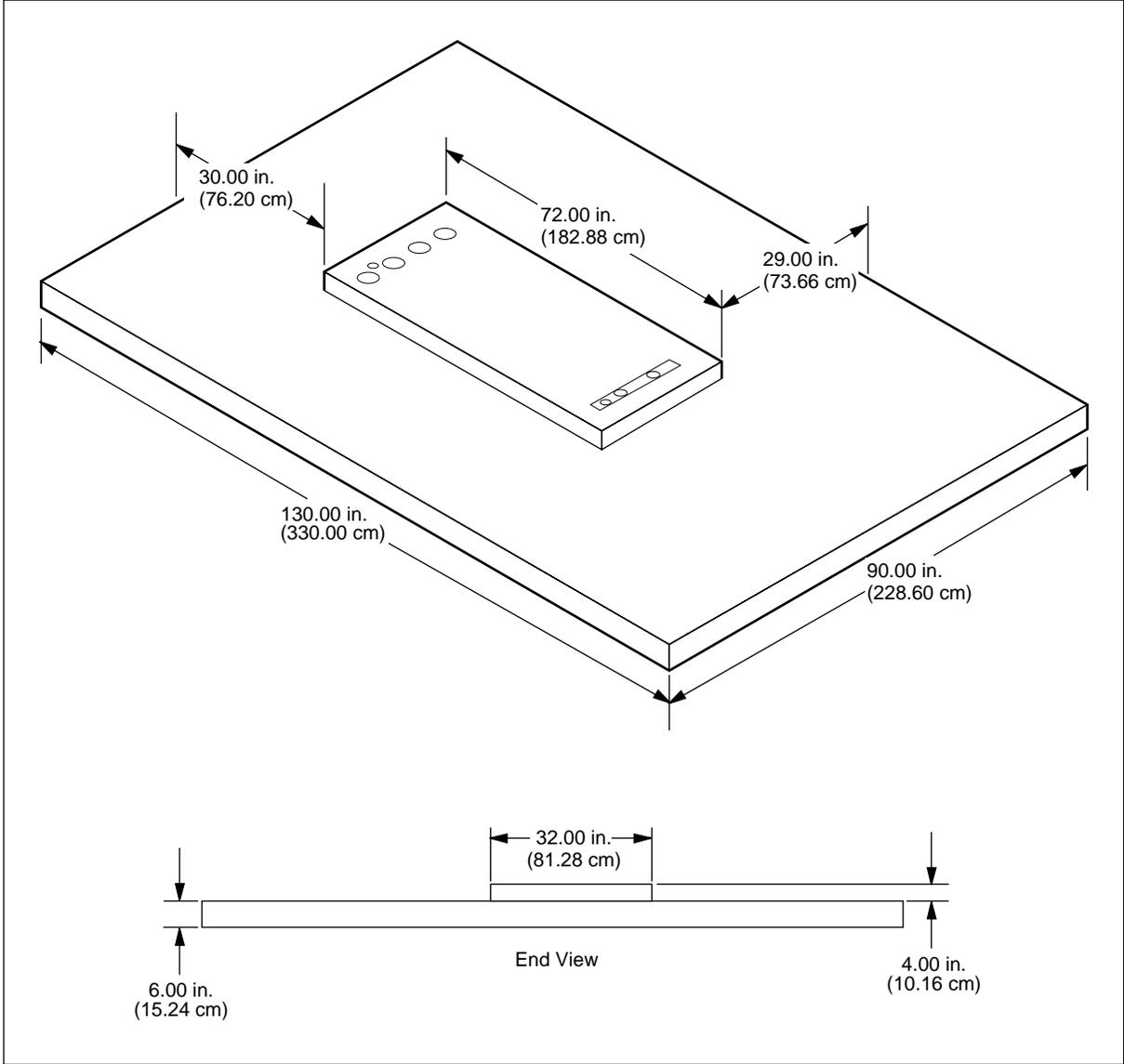
1-10 Installing the pad

Procedure 1-1 (continued)

Preparing the poured-in-place cabinet mounting pad

Figure 1-2
Load box, elevated, wide concrete pad (reference drawing P0729561)

FW-15101

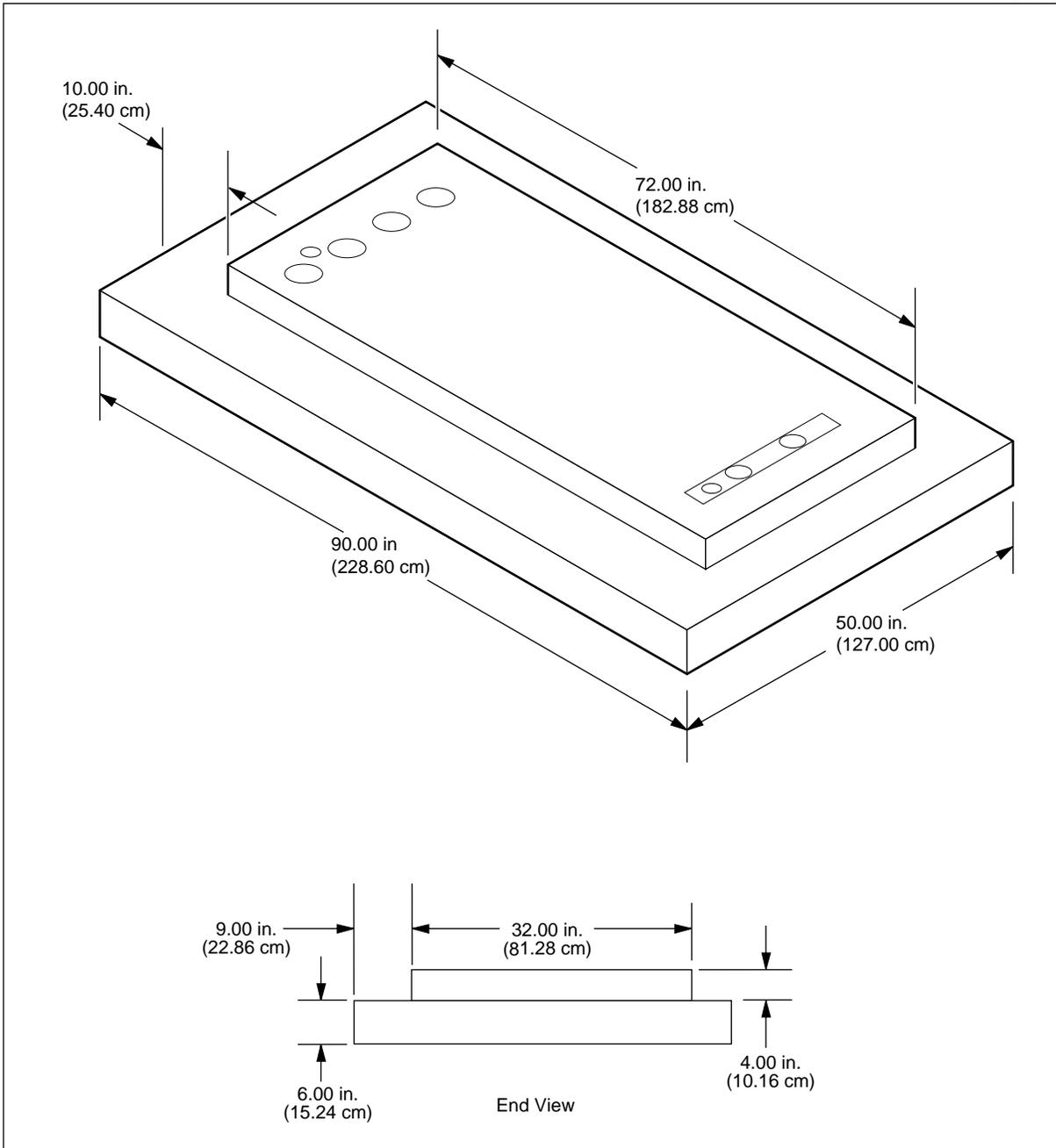


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Procedure 1-1 (continued)
Preparing the poured-in-place cabinet mounting pad

Figure 1-3
Load box, elevated, narrow concrete pad (reference drawing P0729558)

FW-15102



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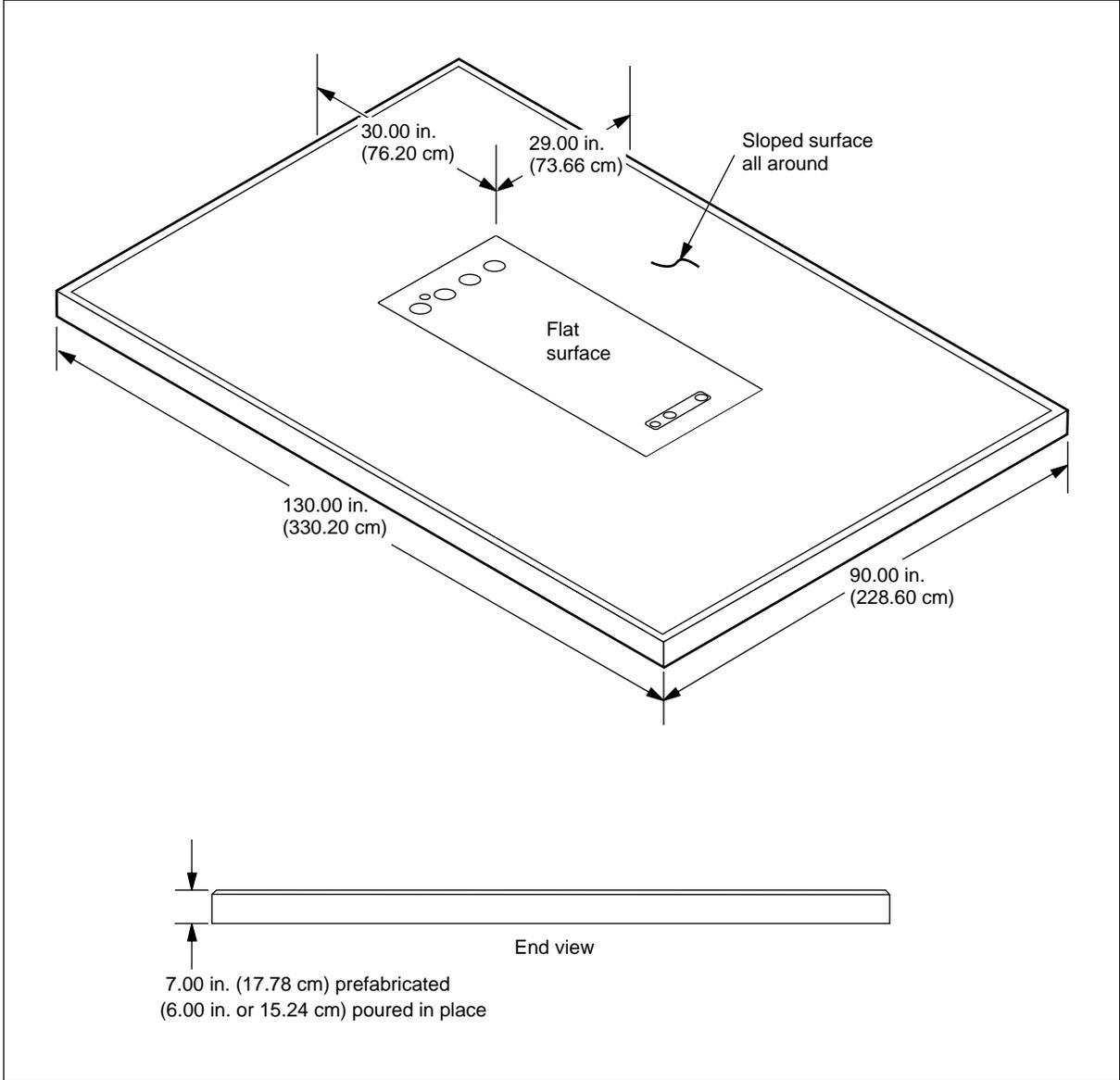
1-12 Installing the pad

Procedure 1-1 (continued)

Preparing the poured-in-place cabinet mounting pad

Figure 1-4
Load box, flat, wide concrete pad (reference drawing P0743184)

FW-15103

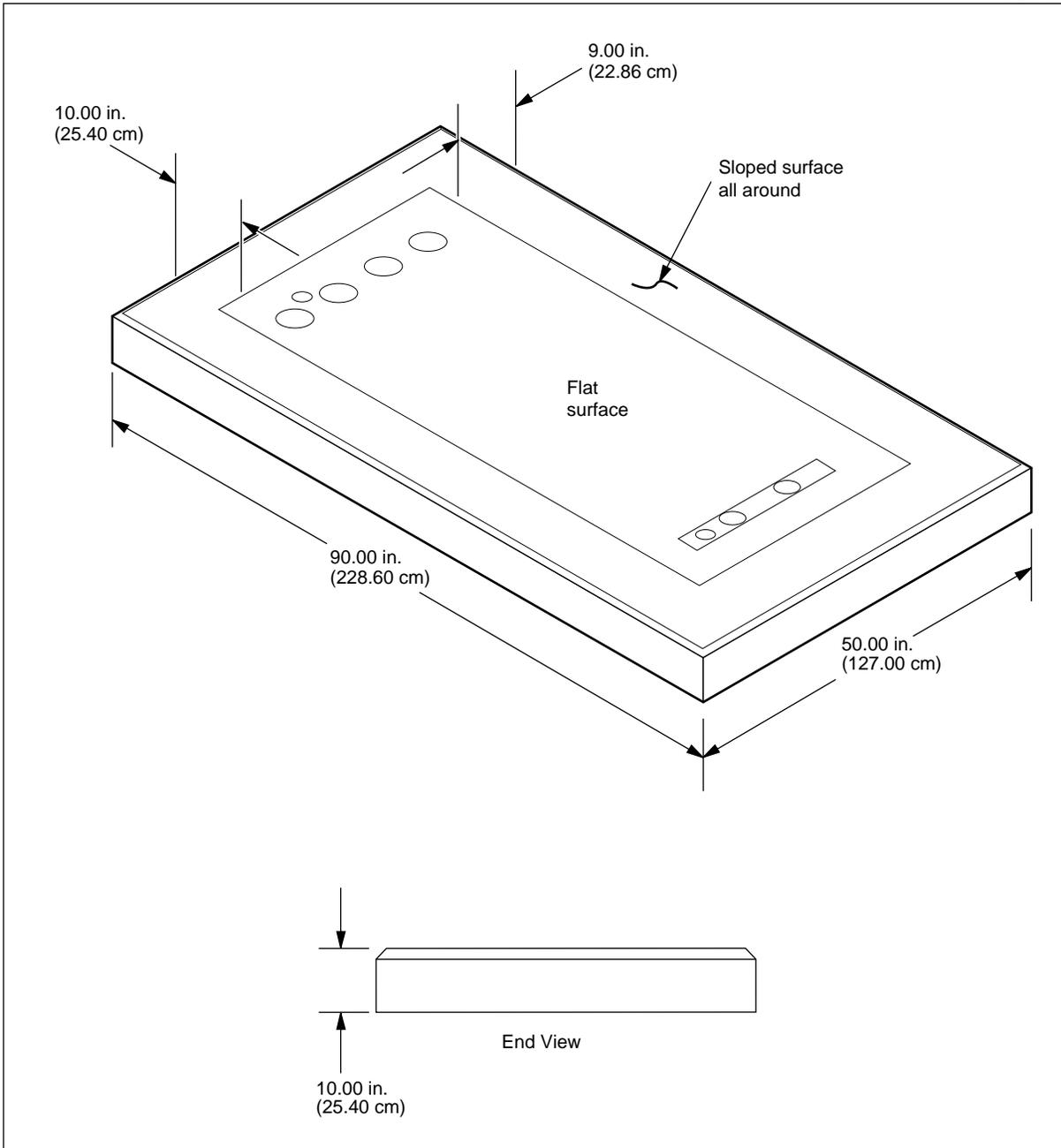


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Procedure 1-1 (continued)
Preparing the poured-in-place cabinet mounting pad

Figure 1-5
Load box, flat, narrow concrete pad (reference drawing P0743183)

FW-15104



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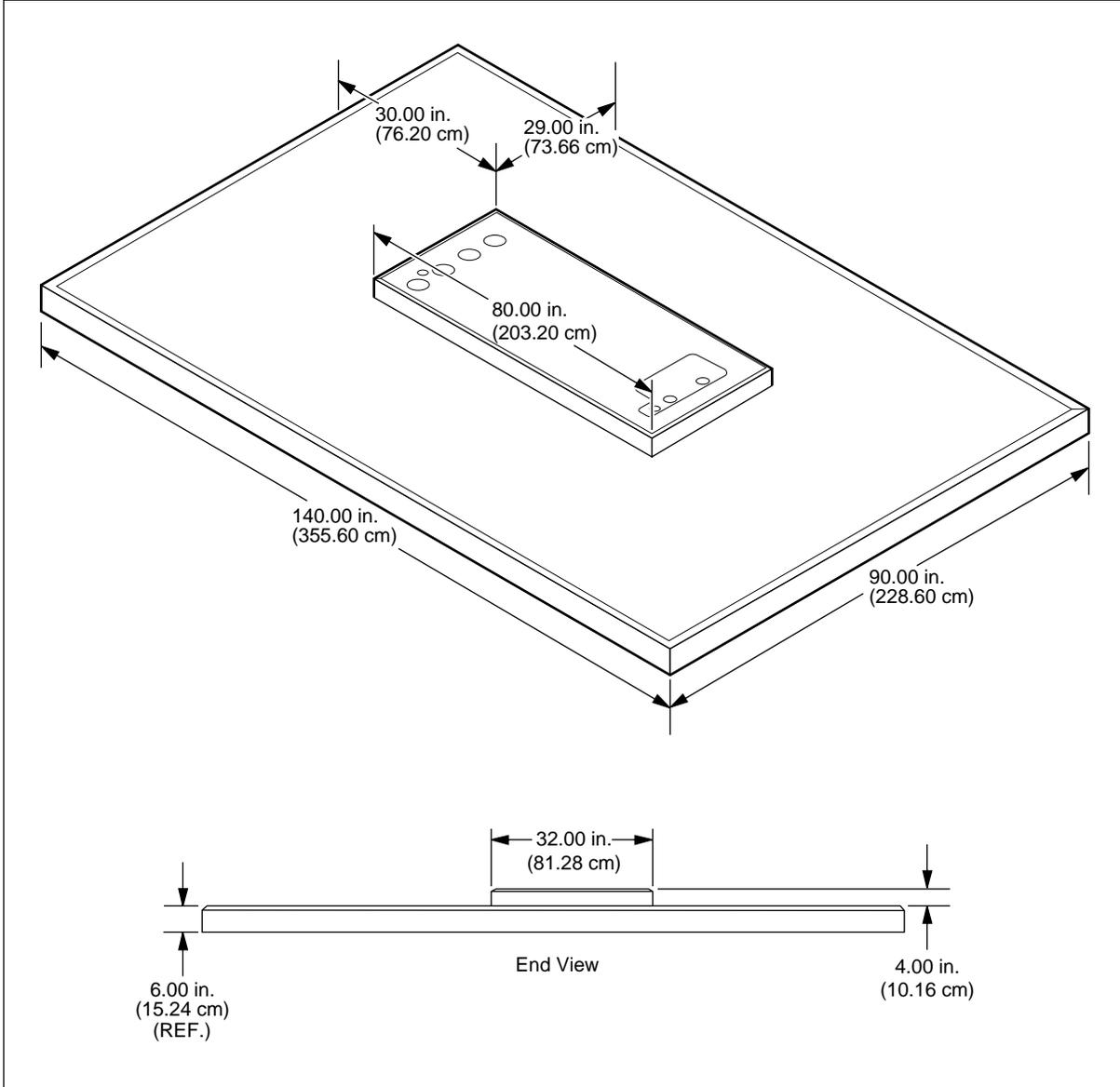
1-14 Installing the pad

Procedure 1-1 (continued)

Preparing the poured-in-place cabinet mounting pad

Figure 1-6
Power pedestal (ac), elevated, wide concrete pad (reference drawing P0743297)

FW-15105

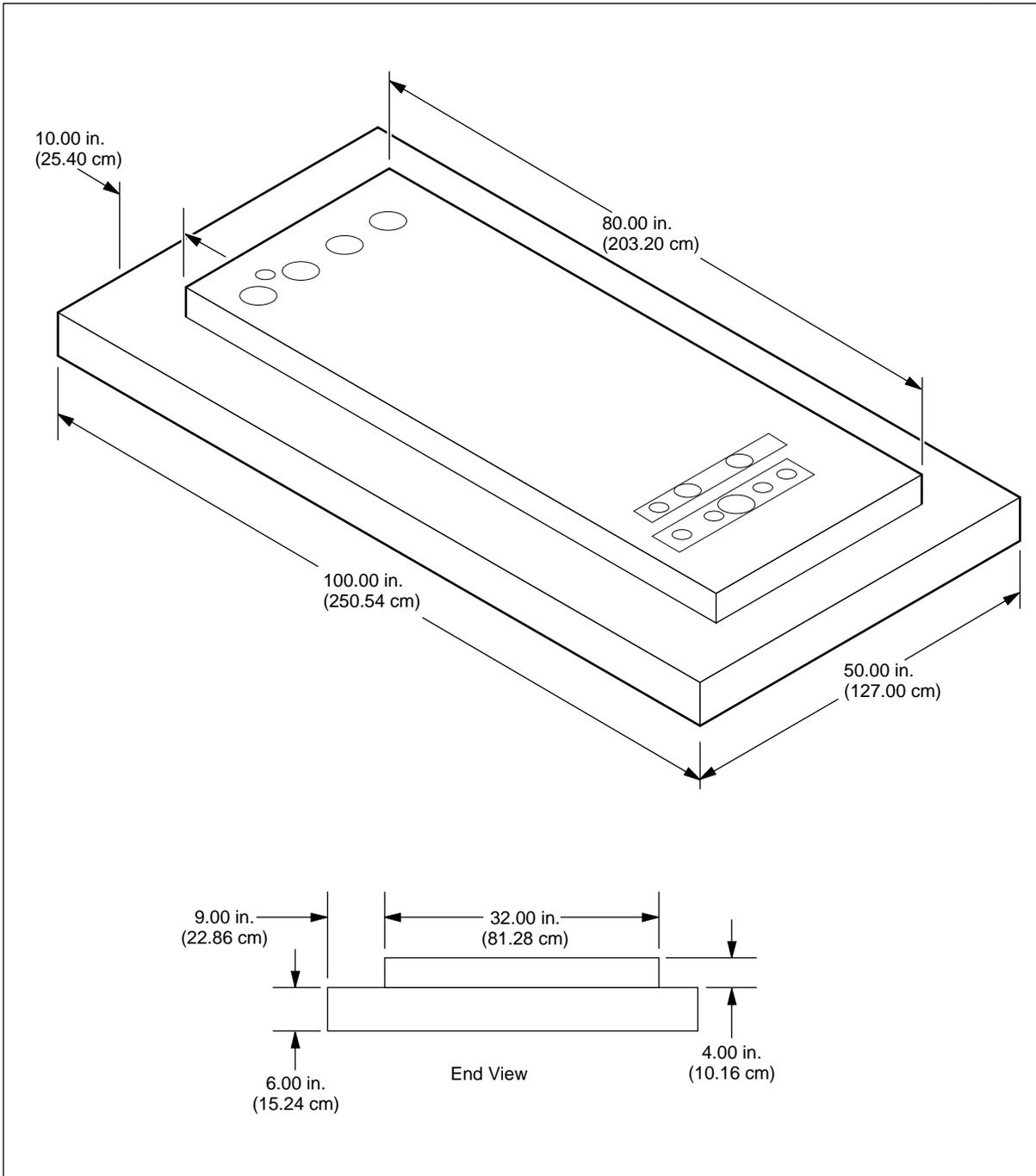


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Procedure 1-1 (continued)
Preparing the poured-in-place cabinet mounting pad

Figure 1-7
Power pedestal (ac), elevated, narrow concrete pad (reference drawing P0729559)

FW-15106



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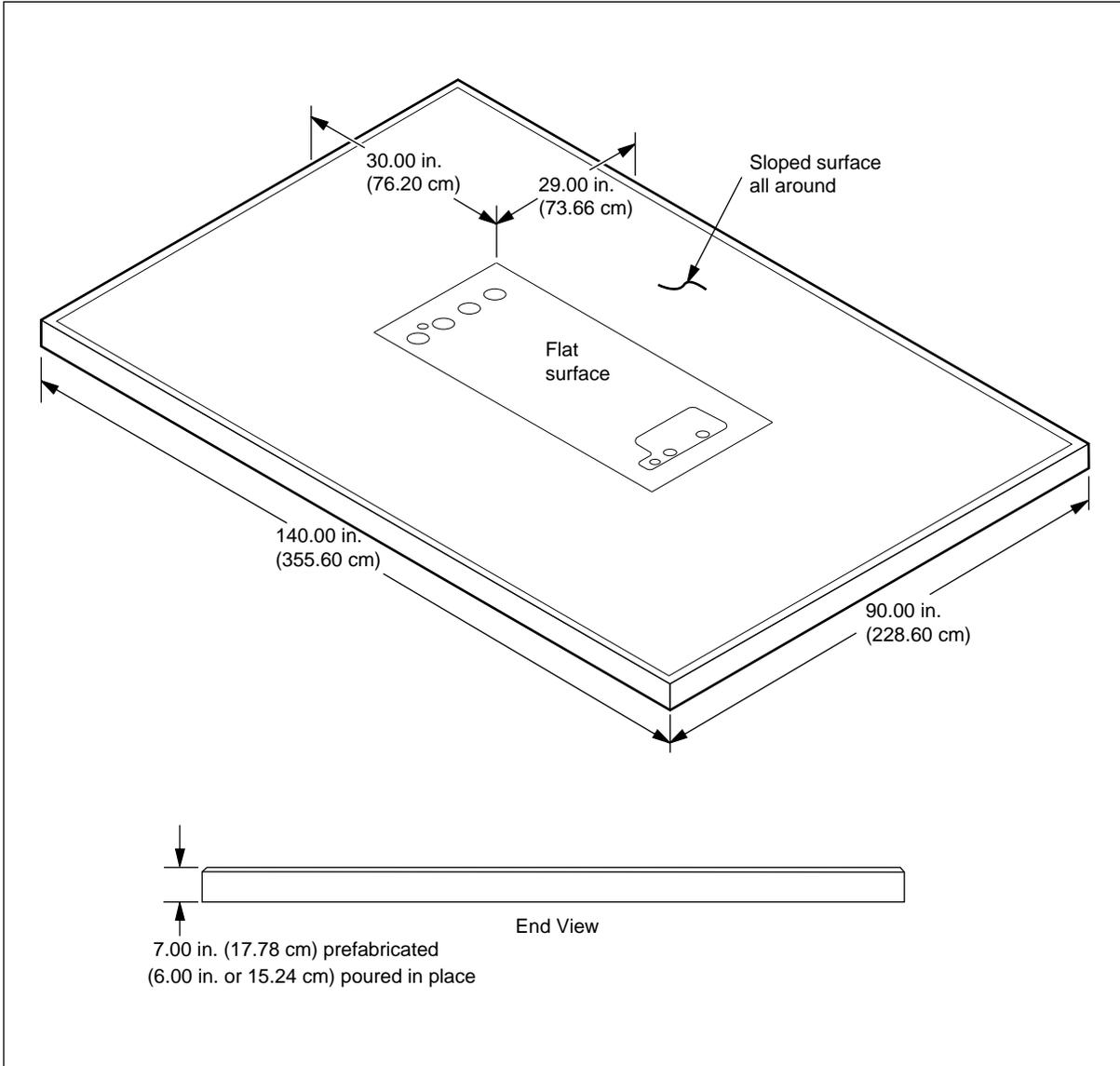
1-16 Installing the pad

Procedure 1-1 (continued)

Preparing the poured-in-place cabinet mounting pad

Figure 1-8
Power pedestal (ac), flat, wide concrete pad (reference drawing P0743255)

FW-15107

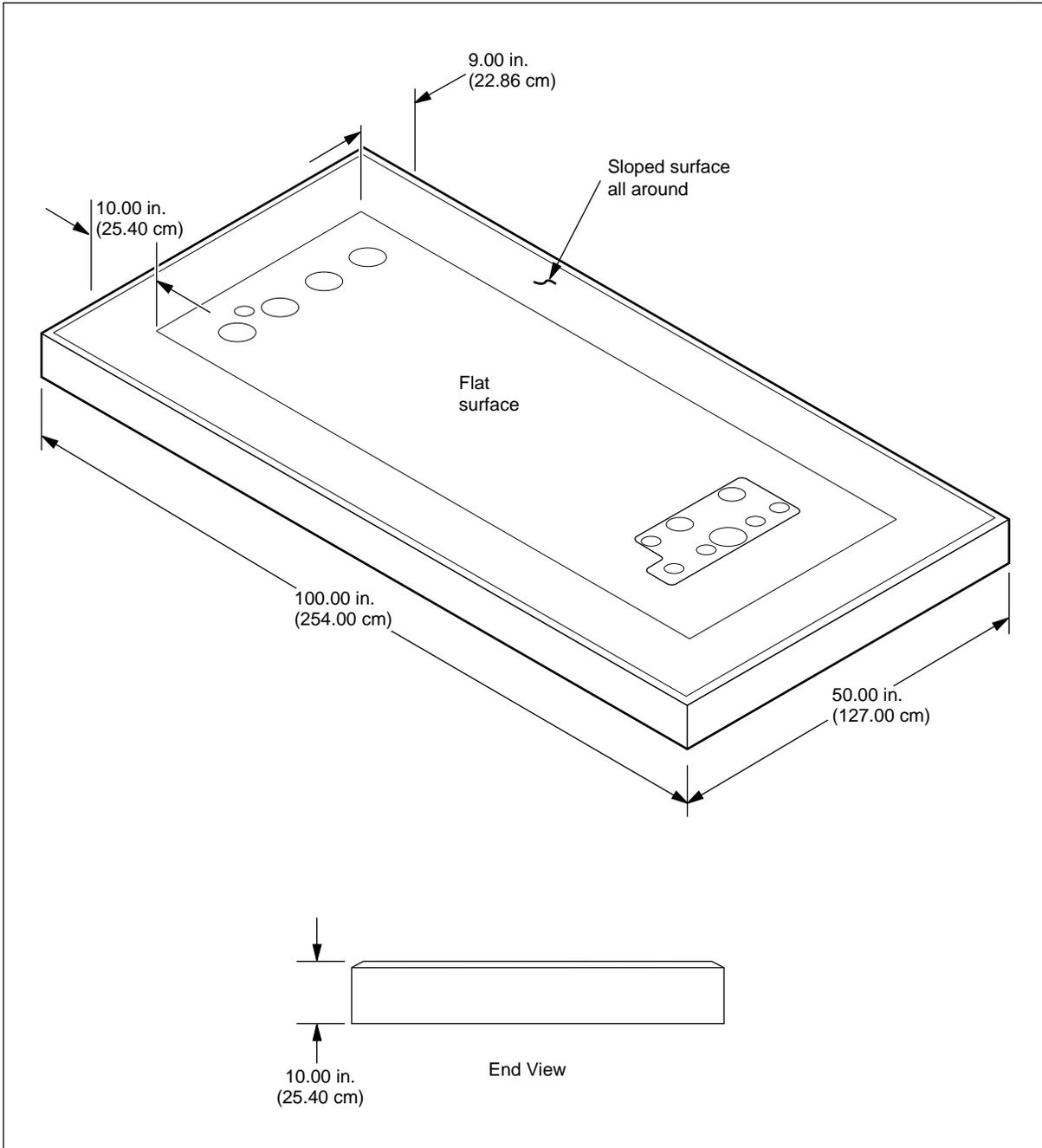


—continued—

Procedure 1-1 (continued)
Preparing the poured-in-place cabinet mounting pad

Figure 1-9
Power pedestal (ac), flat, narrow concrete pad (reference drawing P0743185)

FW-15108



—continued—

1-18 Installing the pad

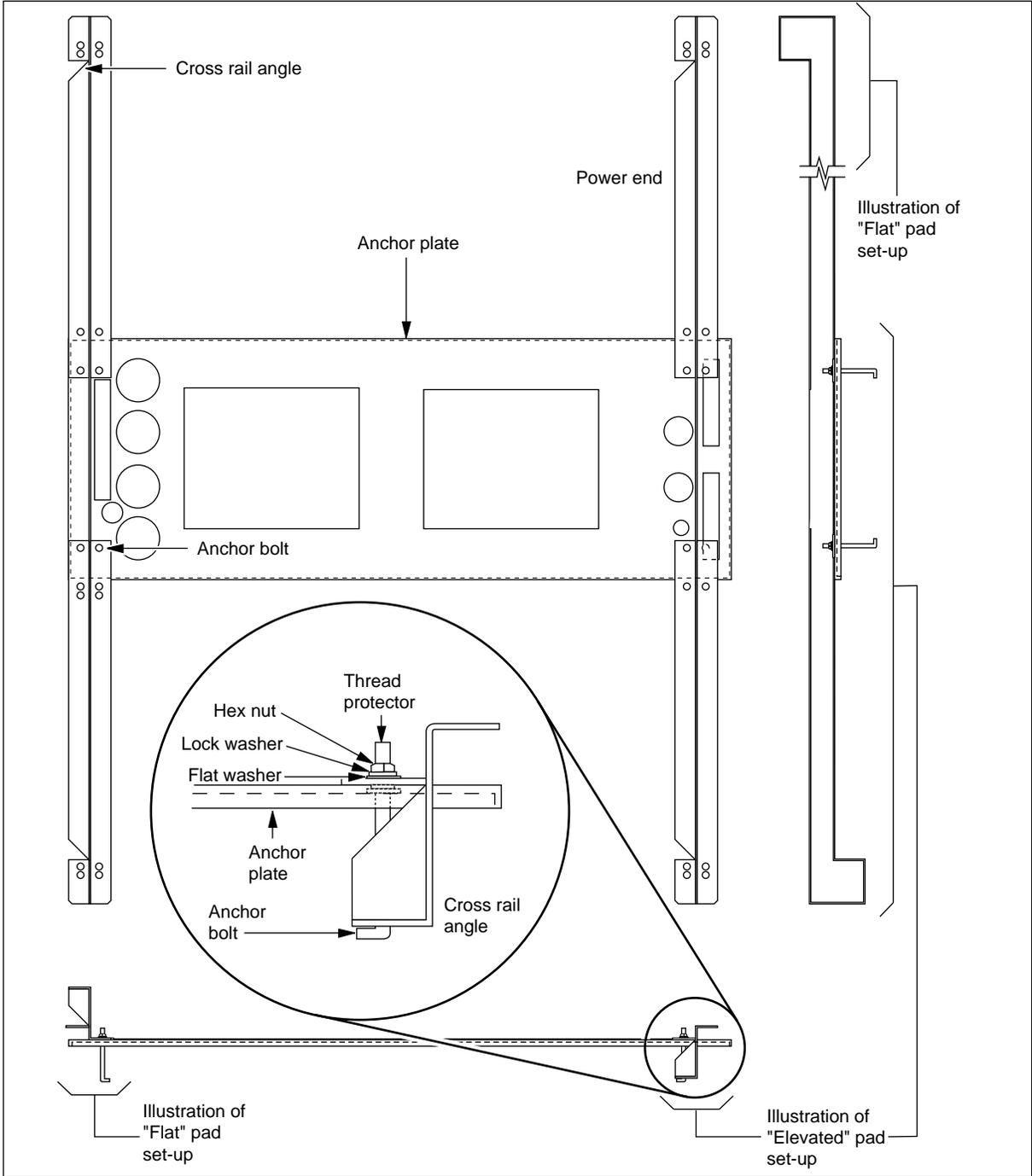
Procedure 1-1 (continued)

Preparing the poured-in-place cabinet mounting pad

Figure 1-10

Load box, wide anchor plate assembly (reference drawing EV7A52FA)

FW-15109

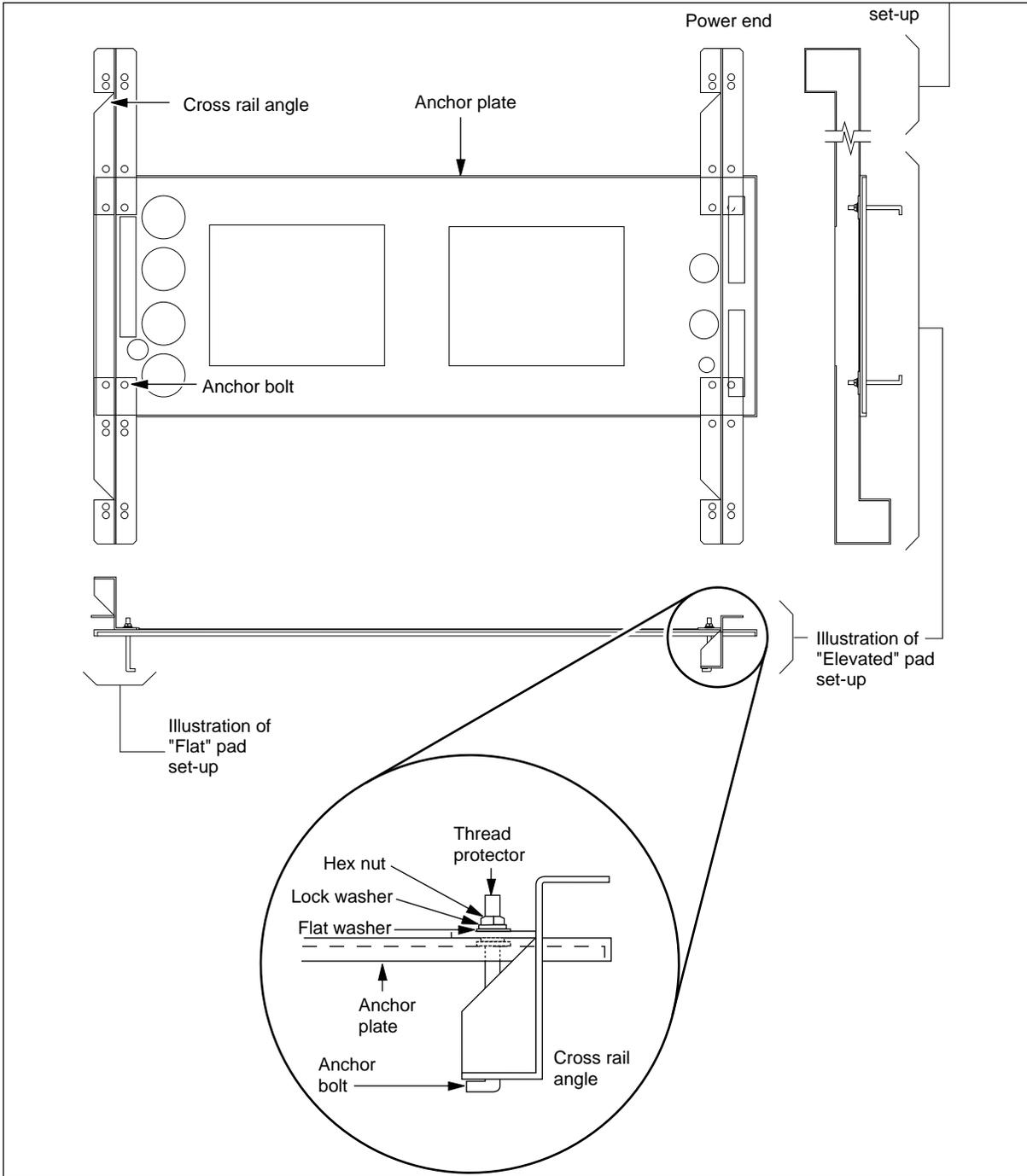


—continued—

Procedure 1-1 (continued)
Preparing the poured-in-place cabinet mounting pad

Figure 1-11
Load box, narrow anchor plate assembly (reference drawing EV7A52CA)

FW-15110



—continued—

1-20 Installing the pad

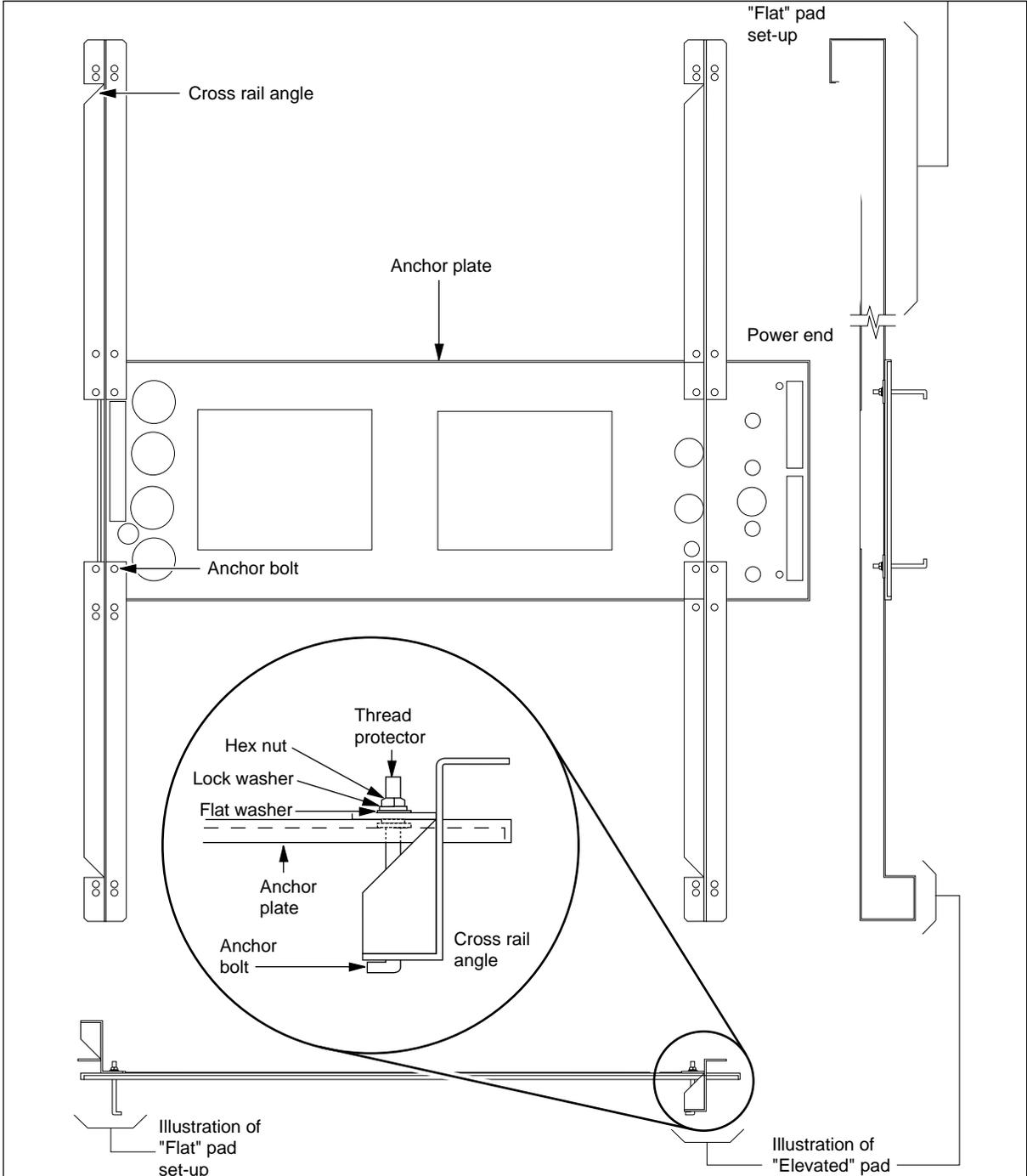
Procedure 1-1 (continued)

Preparing the poured-in-place cabinet mounting pad

Figure 1-12

AC pedestal, wide, anchor plate assembly (reference drawing EV7A52GA)

FW-15111

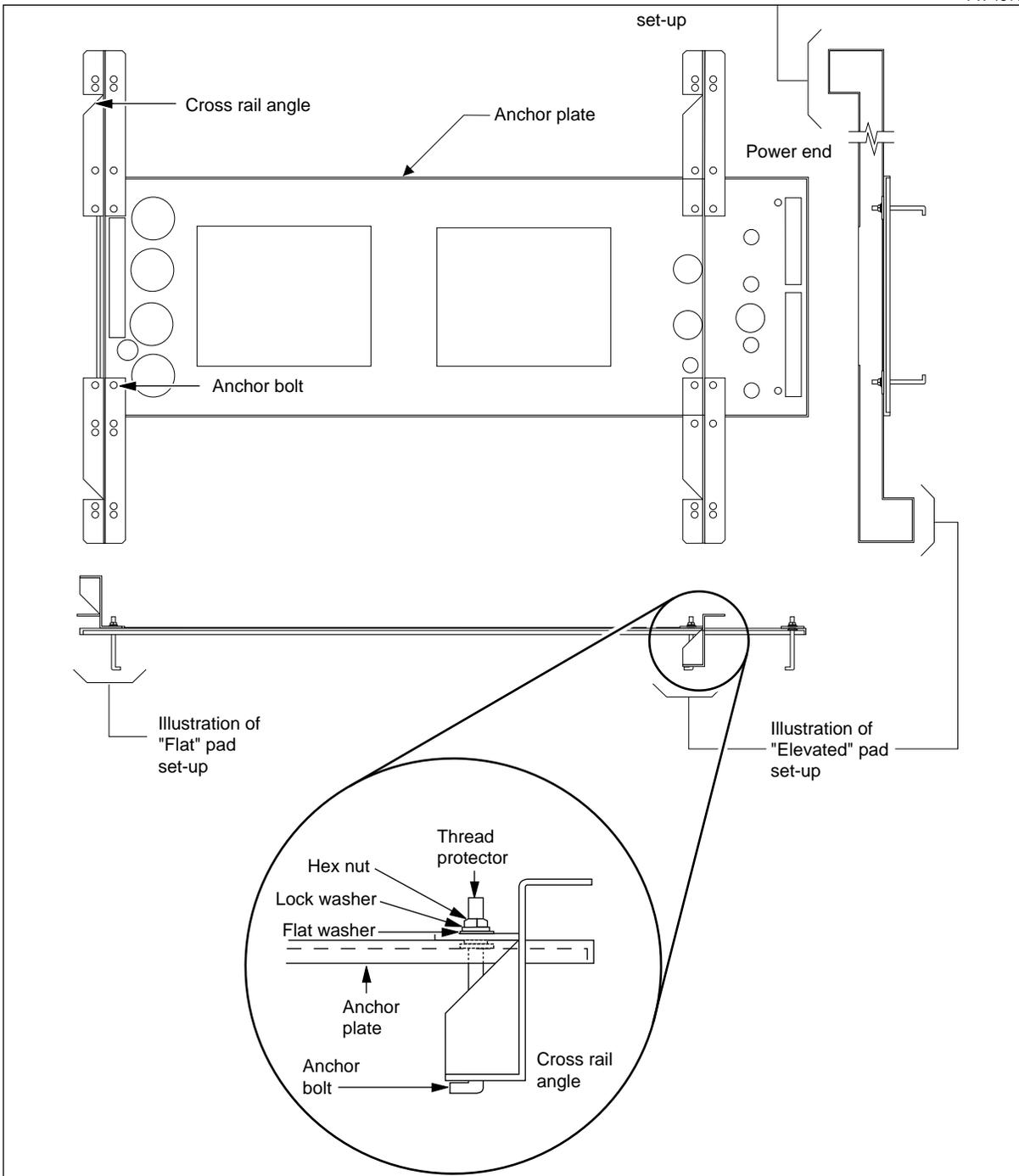


—continued—

Procedure 1-1 (continued)
Preparing the poured-in-place cabinet mounting pad

Figure 1-13
AC pedestal, narrow anchor plate assembly (reference drawing EV7A52DA)

FW-15112



—continued—

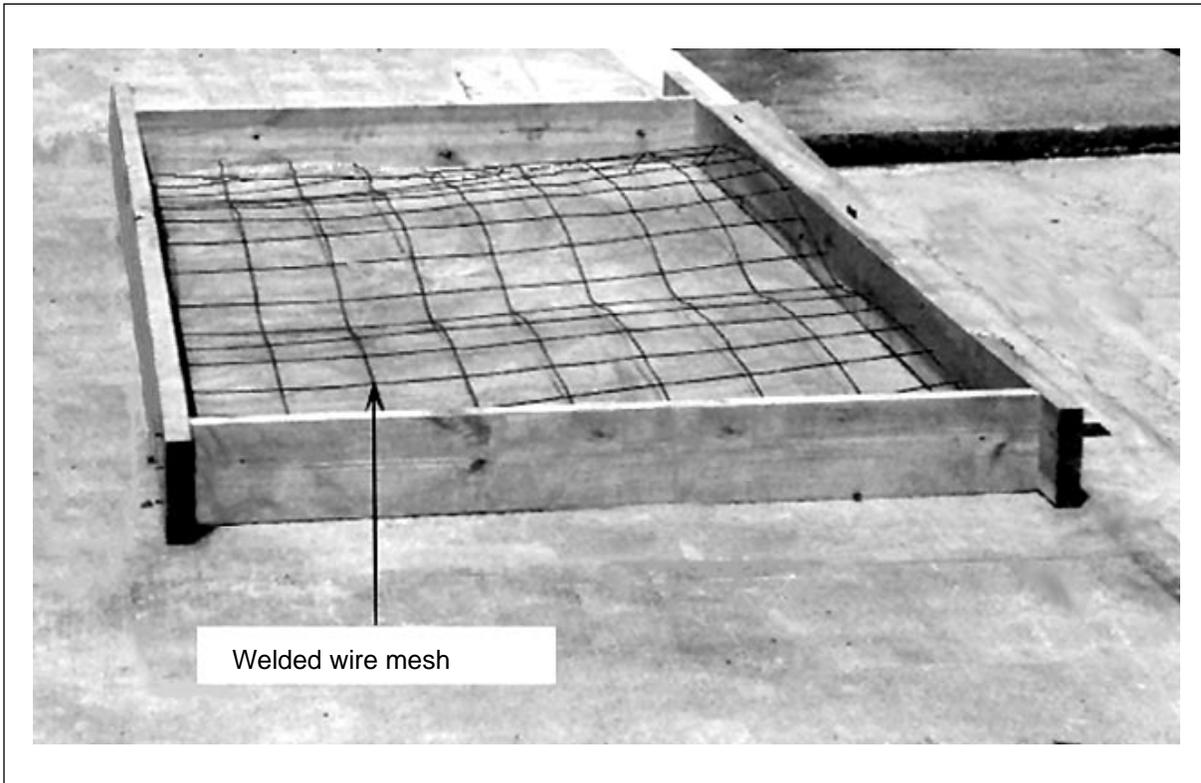
1-22 Installing the pad

Procedure 1-1 (continued)

Preparing the poured-in-place cabinet mounting pad

Figure 1-14

Position the welded wire mesh inside the form



—end—

Procedure 1-2

Pouring the concrete

The anchor plate assembly kit is required for construction of the pad and cable conduit. Refer to *Engineering and Ordering*, 323-3001-032, in the *Engineering, Configuration and Ordering Guide*, Volume 1, for ordering information.

This procedure applies to the following types of pad arrangements:

- standard raised
- adjacent attached pedestal
- remote pedestal
- standard wide pad

Prerequisites for installation

Installation procedures assume the following:

- Procedure 1-1 on page 1-8, “Preparing the poured-in-place cabinet mounting pad” has been completed.
- The cabinet concrete pad is installed above local flooding levels.
- A minimum clearance of 32 inches (81 cm) is required on all sides of the cabinet for door clearance.
- All hardware and materials are available, and have been checked for completeness and readiness for the installation.
- All the required drawings, local installation instructions, job specifications, and other documentation are available and ready for use.

Concrete specifications

Specifications for the concrete are included in the following paragraphs.

Cement

At the discretion of the manufacturer, Portland cement must be:

- Type I or III conforming to ASTM specs for Portland cement
- C150 or Type IA of IIIA conforming to the ASTM specifications for air-entraining Portland cement

Note: If C175 air-entrained admixtures are used, they must conform to ASTM C-268.

—continued—

Pouring the concrete

Aggregates

Aggregates must conform to the ASTM specifications for concrete aggregates, C33. Coarse aggregates must be graded from 3/4 in. (1.09 cm) to No. 4.

Lightweight aggregates are not permitted.

Water

Water must be free from injurious amounts of impurities. Potable water must be considered as meeting the requirements of the specifications.

Concrete

All concrete must conform to ASTM specifications for concrete:

- Slump of the concrete must be 2–4 in. (5.08–10.16 cm), inclusive, determined in accordance with ASTM C143 which tests the slump of Portland cement concrete.
- The minimum acceptable compressive strength for the concrete is 4,000 PSI, determined in accordance with ASTM C39 which tests the compressive strength of concrete cylinders.
- For concrete made with Types I or IA Portland cement, the ASTM C143 and ASTM C39 tests must be performed at twenty days following the pouring of the pad.
- For concrete made with Types III or IIIA Portland cement, the applicable ASTM tests must be performed at seven days following the pouring of the pad.
- Water must not be added to the concrete batch after test samples for slump tests and strength tests have been taken.
- The equipment, materials, and methods used for production of concrete must ensure the required quality and conform to the applicable requirements of AC1318.

Tools required

A spirit level tool is required.

Materials (concrete forms as required)

- pole or rod to distribute concrete inside the template
- reinforcing rods (#4x10-inch spacing) when required

—continued—

 Procedure 1-2 (continued)
Pouring the concrete

Action

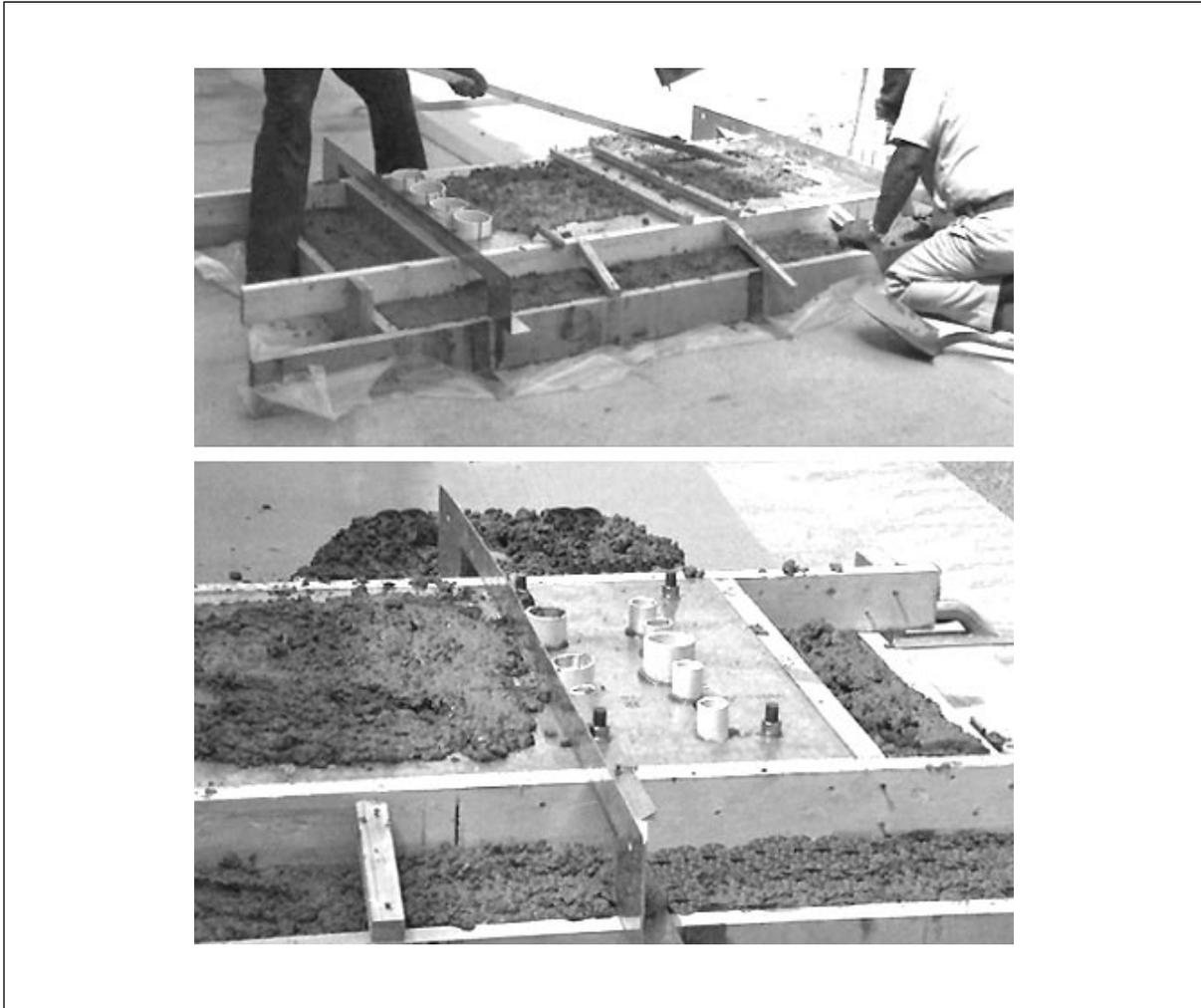
Step	Action
1	<p>Pour the pad concrete through the large openings at each end of the anchor assembly.</p> <p>Note: When two inches of concrete cover the bottom of the form, pull up the welded wire mesh up through the concrete so that it sits on top of the concrete.</p>
2	<p>Distribute the concrete evenly throughout the template, especially around the cable conduits (see Figure 1-15 on page 1-26).</p> <p>Note: Use a rod or pole to work the concrete up into the corners of the form.</p>
3	<p>Level off the concrete with a trowel so that the surface is flush with the top of the anchor plate.</p> <p>Note 1: Make sure there is no downward slope toward the cabinet that could allow water to pool around the cabinet base.</p> <p>Note 2: Before the concrete sets, check the leveling of the anchor plate with a spirit level.</p>
4	<p>Wash the residue from the top of the anchor plate (see Figure 1-16 on page 1-27).</p>
5	<p>Edge all corners for a smooth finish when the concrete begins to set.</p>
6	<p>Allow the concrete to dry and cure.</p>
7	<p>Remove the form and the cross angles.</p>
8	<p>Edge and patch the concrete as needed.</p> <p>Note: Make sure that all conduit extending above the concrete is free of sharp edges or burrs.</p>
9	<p>Reinstall the washers, nuts, and plastic caps on the anchor bolts after the cross angles are removed (see Figure 1-17 on page 1-28).</p> <p>Note: Make sure the surface is sound and free of honeycomb. Only a minimum of patching and finishing should be required to fill the holes left by the form ties, if used, and to remove minor irregularities. Any chips or voids 1/4-inch deep or greater (1/2-inch at the edges) should be patched. There should be no cracks through the surface.</p>

—continued—

1-26 Installing the pad

Procedure 1-2 (continued)
Pouring the concrete

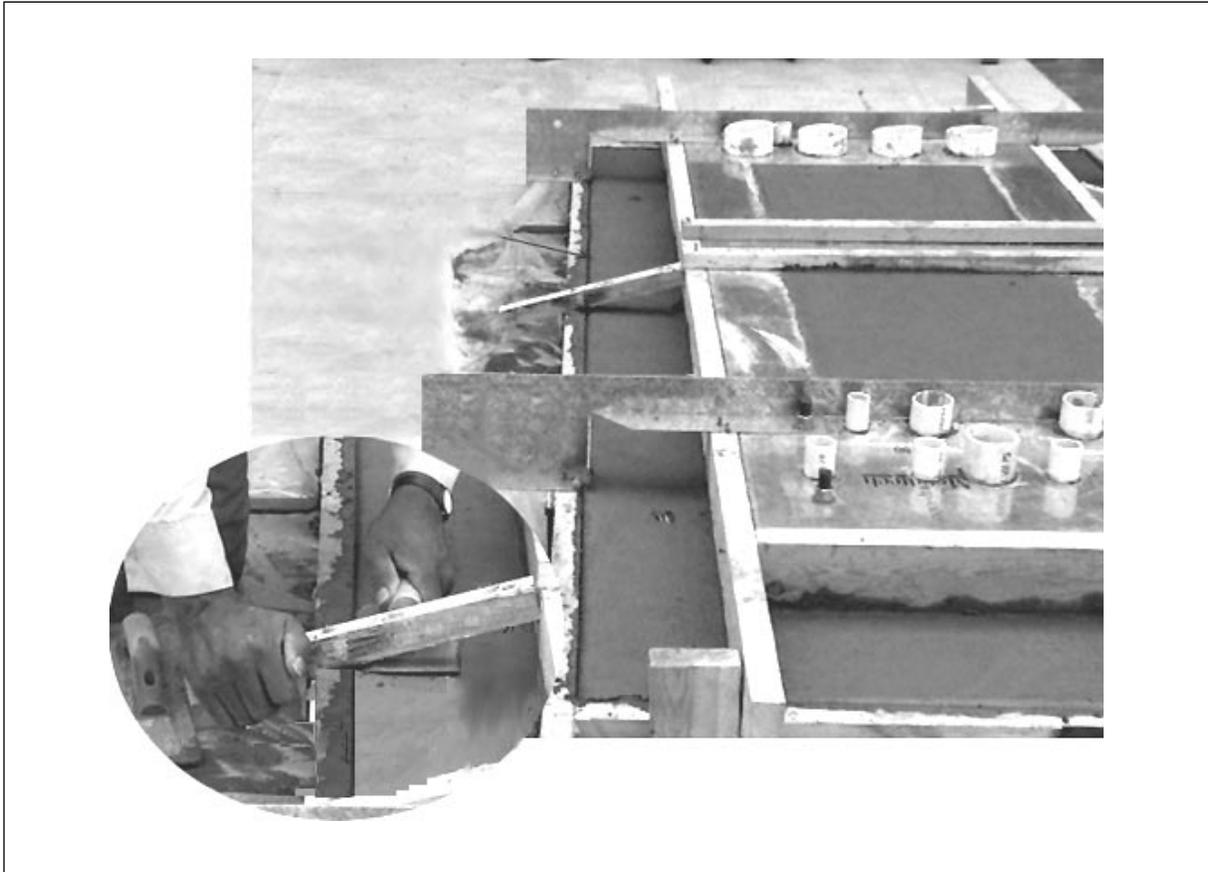
Figure 1-15
Pouring and working the concrete into the template



—continued—

Procedure 1-2 (continued)
Pouring the concrete

Figure 1-16
Leveling and edging the concrete

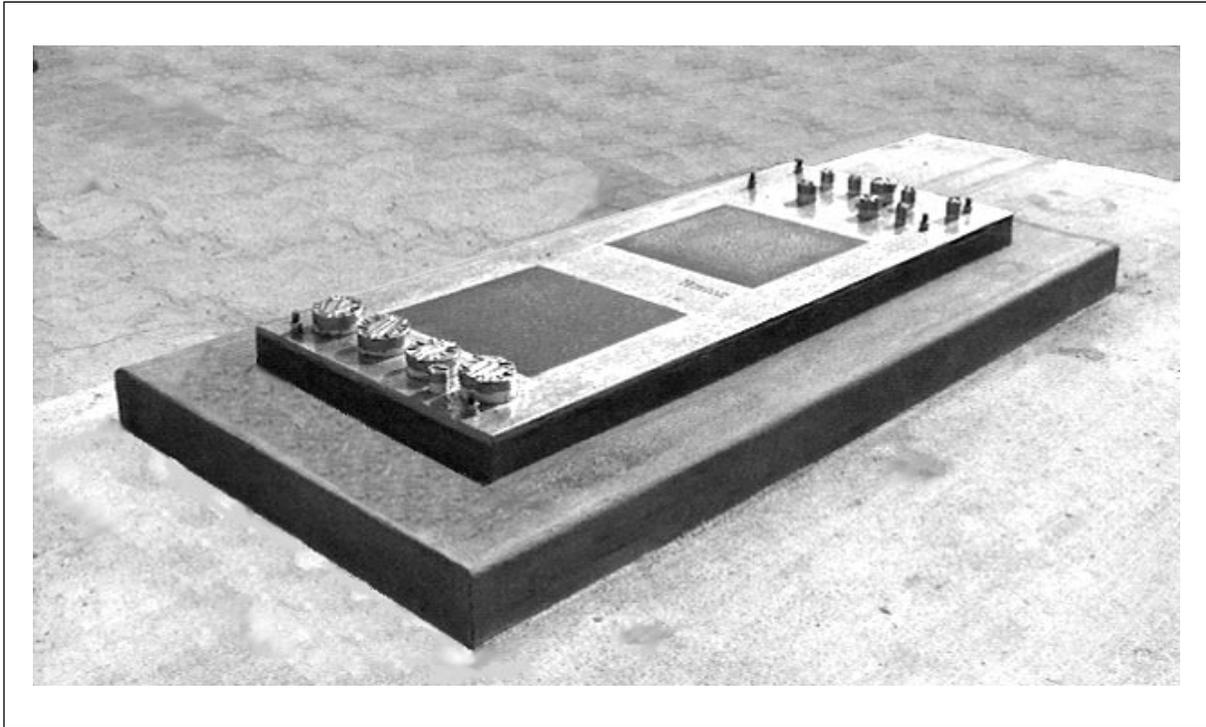


—continued—

1-28 Installing the pad

Procedure 1-2 (continued)
Pouring the concrete

Figure 1-17
Finished poured-in-place pad with form removed



—end—

Installing the cabinet

This chapter contains procedures for preparing a concrete pad and mounting the AccessNode Series 800A cabinet.

How to use this chapter

In the following table, you will find a list of procedures required to install the AccessNode S800A Outside Plant (OSP) cabinet. Perform the procedures in the order listed. If you cannot successfully complete these procedures, contact your next level of support.

Chapter task list

This chapter includes the following tasks:

Task	See
Unpacking the cabinet	Procedure 2-1 on page 2-7
Preparing the pad	Procedure 2-2 on page 2-10
Preparing the cabinet for installation	Procedure 2-3 on page 2-14
Mounting the cabinet on the pad	Procedure 2-4 on page 2-23
Enabling the door locks	Procedure 2-5 on page 2-31

Prerequisites for installation

The operating company is responsible for the choice of site and compliance with local regulations such as the applicable electrical codes, right-of-way easements, and noise requirements.

The installation procedures in this chapter assume the following:

- All hardware and materials listed below are available and have been checked for completeness and readiness for installation.
 - one pad sealant kit (shipped loose inside the cabinet)
 - one 2.5-inch (63.5 mm) trade size permanent virtual circuit (PVC) conduit straight coupling (supplied as part of the power pedestal ac option)
 - leveling shims
 - caulking compound
- The correct cabinet pad has been poured, cured and prepared at the site as described in Chapter 1, “Installing the pad”.
- All the required drawings, local installation instructions, job specifications, and other documentation are available and ready for use. The precast pad descriptions and the reference drawings for each pad are described in Chapter 1, “Installing the pad” in these tables:
 - Table 2-2, “Termination compartment conduit openings” on page 2-4
 - Table 2-3, “AC load box conduit openings” on page 2-4

Mounting the cabinet

Typically, the cabinet is mounted on a poured concrete pad with buried power and telephone cables passing up through the pad into the bottom of the cabinet. See chapter 1, “Installing the pad” for more information.

Anchor plate kits

To facilitate placement, optional anchor plate kits are available as shown in Table 2-1.

Each kit consists of an 11-gauge galvanized anchoring template assembly with anchor bolts and temporary support angles.

Table 2-1
Anchor plate kits and drawings

For this anchor plate kit assembly	Refer to	Drawing number
Load box, wide	Figure 1-10 on page 1-18	EV7A52FA
Load box, narrow	Figure 1-11 on page 1-19	EV7A52CA
AC pedestal, wide	Figure 1-12 on page 1-20	EV7A52GA
AC pedestal, narrow	Figure 1-13 on page 1-21	EV7A52DA

Securing the cabinet to the pad

To secure the cabinet, two anchor bolts are accessible by removing the lower access plate on the ac side of the cabinet. The remaining two bolts can be reached through the termination compartment by opening the compartment door and the serving area interface (SAI) swing frame. To secure the attached ac power pedestal option, the anchor bolts are accessible by opening the compartment door.

The top of the cabinet is fitted with four removable lifting eyebolts that support the load during site installation. After cabinet mounting, the four lifting bolts should be removed and replaced with a stainless steel bolt and a stainless steel flat washer that are included with each cabinet.

Cable entry

The S800A cabinet is constructed with cable conduit entry ports located at the bottom of the end compartments of the cabinet (see Figure 2-1 on page 2-6).

Note: All trade sizes listed are based on Schedule 40 PVC.

Termination compartment

The termination compartment has four 4.5 in. inside diameter (ID) openings for 4 in. trade size conduit and one 2 in. ID opening for 1 in. trade size conduit.

Table 2-2 shows the conduit openings in the termination compartment.

Table 2-2
Termination compartment conduit openings

Opening size	Conduit trade size	Function
4.50 in. (11.43 cm)	4.00 in.in. (10.16 cm)	VF - pairs 1–600 cable entrance
4.50 in. (11.43 cm)	4.00 in. (10.16 cm)	VF - pairs 601–1200 cable entrance
4.50 in. (11.43 cm)	4.00 in. (10.16 cm)	VF - miscellaneous cable entrance
4.50 in. (11.43 cm)	4.00 in. (10.16 cm)	VF - HF or fiber cable entrance
2.00 in. (5.08 cm)	1.50 in. (3.81 cm)	Earth ground rod connection entrance

AC load box option

The ac load box option has two 3 in. ID openings for 2 in. trade size conduit and a 1 in. ID opening for 1 in. trade size conduit for grounding.

The ac power enters the S800A cabinet via conduit holes located on the bottom left side of the ac power compartment.

Table 2-3 shows the conduit openings in the ac load box.

Table 2-3
AC load box conduit openings

Opening size	Conduit trade size	Function
3.0 in. (7.62 cm)	2.0 in. (5.08 cm)	Miscellaneous - dc feed, when required
3.0 in. (7.62 cm)	2.0 in. (5.08 cm)	AC entrance - commercial ac feed
1.5 in. (3.81 cm)	1.0 in. (2.54 cm)	Earth ground rod connection entrance

AC power pedestal

For cabinets equipped with the optional attached ac power pedestal, there is a 3.5 in. ID opening for 2.5 in. trade size conduit for ac supply and four 2 in. ID openings for 1.25 in. trade size conduit for miscellaneous cabling and grounding as required (see Figure 2-3 on page 2-11).

Table 2-4 shows the conduit openings in the ac power pedestal.

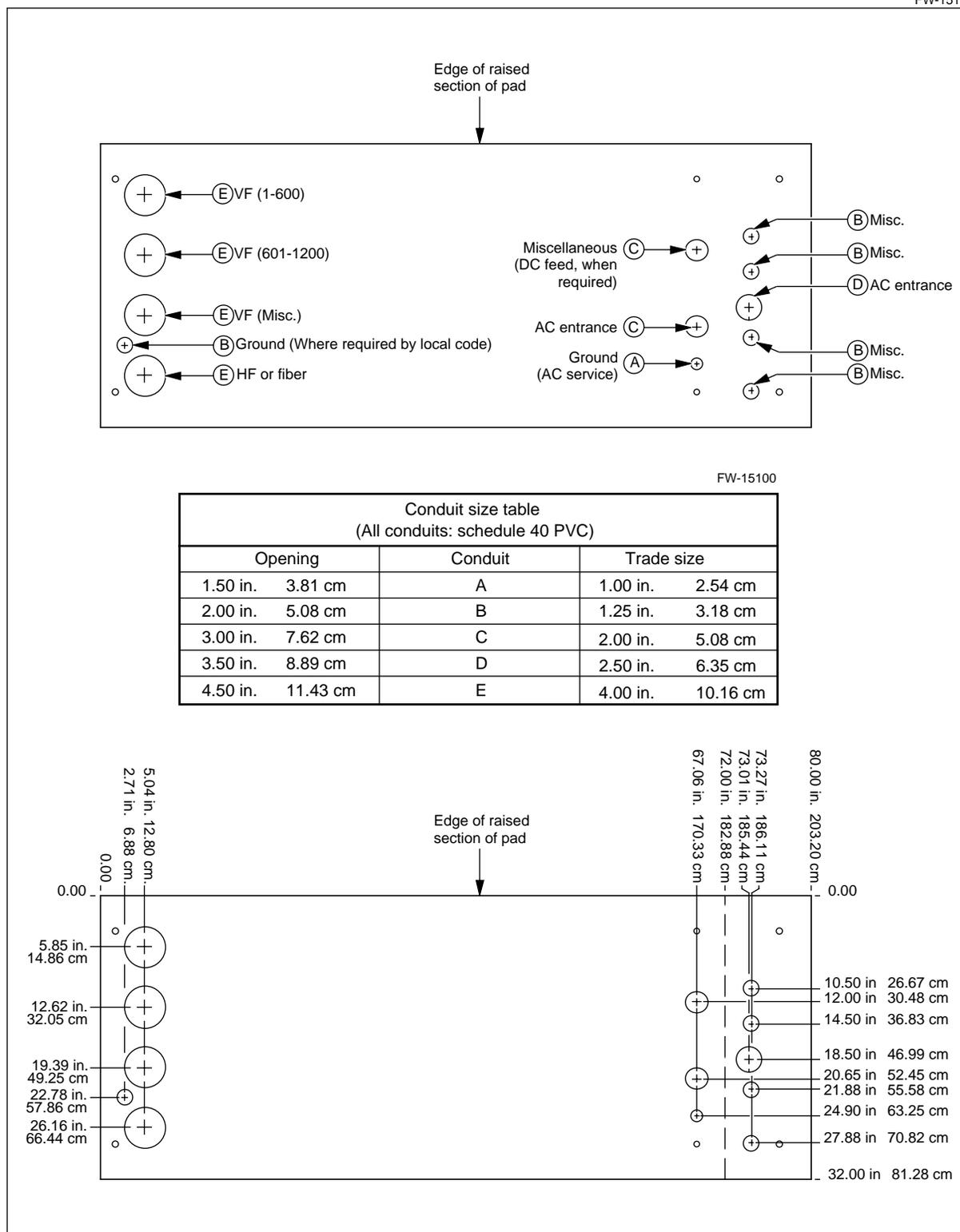
Table 2-4
AC power pedestal conduit openings

Opening size	Conduit trade size	Function
3.50 in. (8.89 cm)	2.50 in. (6.35 cm)	AC entrance - commercial ac feed
2.00 in. (5.08 cm)	1.25 in. (3.18 cm)	Miscellaneous - dc feed or grounding
2.00 in. (5.08 cm)	1.25 in. (3.18 cm)	Miscellaneous - dc feed or grounding
2.00 in. (5.08 cm)	1.25 in. (3.18 cm)	Miscellaneous - dc feed or grounding
2.00 in. (5.08 cm)	1.25 in. (3.18 cm)	Miscellaneous - dc feed or grounding

2-6 Installing the cabinet

Figure 2-1
Trade size conduit usage and placement

FW-15100



Procedure 2-1

Unpacking the cabinet

Use this procedure to unpack the cabinet after the pad is prepared and the cabinet installation is ready to begin.

Use care when unpacking the cabinet to avoid injury and damage to the cabinet.

Precautions

The following safety precautions should be observed at all times during the cabinet installation procedures:

- Do not install equipment until the cabinet is firmly secured to its mounting pad, as described in this chapter.
- Use special care when working with a cabinet that is not firmly secured to the mounting pad.
- Do not open the front or rear doors unless the cabinet is firmly secured to the shipping pallet or the mounting pad.
- Use special care to prevent damage when handling the sealant kit material.

Tools and materials required

- one wrench, 6-8 in. adjustable or open-end 5/8 in. (15.875 mm)
- one claw hammer or ripping bar to remove crating material
- one deep-well socket driver set, 1/2 in. drive
- one sealant kit supplied with the cabinet

Action

Step	Action
1	Check the packing notes to verify that all items have been received.
2	Report any discrepancies immediately.
3	Inspect the shipping container for evidence of damage during shipment.
4	Report any such evidence immediately for investigation and possible damage claims.

—continued—

2-8 Installing the cabinet

Procedure 2-1 (continued) Unpacking the cabinet

- | Step | Action |
|------|--|
| 5 | Carefully remove all crating material from around the cabinet and pallet.
Note: Do not remove the cabinet from the shipping pallet until the final placement at the installation site. |



CAUTION

Shipping bracket removal

The top shipping brackets are required to secure the equipment frames to minimize the effects of external environmental vibrations.

In Zone 4 regions, the top and bottom shipping brackets are required.

Always check the shipping brackets, and re-install if necessary, before leaving the cabinet.

- | | |
|---|---|
| 6 | Open the electronics compartment doors to reach the swing frames. |
|---|---|

—continued—

Procedure 2-1 (continued)
Unpacking the cabinet

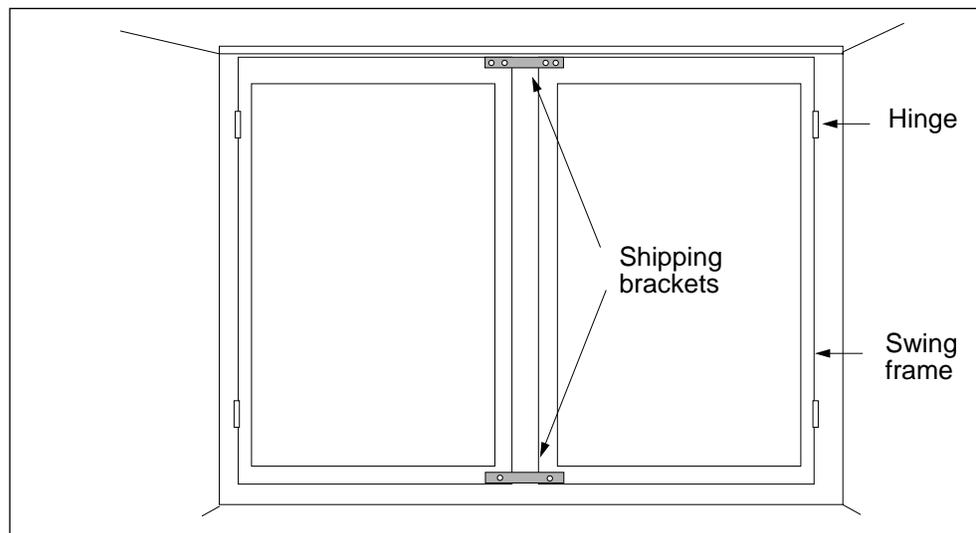
Step Action

- 7** Remove the shipping brackets located at the top and bottom of the swing frames in the electronics compartment as shown in Figure 2-2.

Save the shipping bracket hardware for later re-installation.

Note: To re-install the shipping brackets, see Procedure 11-3 on page 11-7, "Installing the shipping brackets".

Figure 2-2
Shipping brackets on swing frame



- 8** Open the swing frames and remove the following items from the electronics compartment:
- sealant kit
 - Durometer rubber pads for the ac pedestal enclosure (if installed)
 - all conduit cap plugs mounted in the bottom conduit entrances
- 9** Close the swing frames and the cabinet doors.

—end—

Procedure 2-2 Preparing the pad

Use this procedure to prepare the pad for cabinet installation.

Precautions

The following safety precautions should be observed at all times during the cabinet installation procedures:



CAUTION 1

Potential equipment damage and personal injury

No equipment should be installed until the cabinet is firmly secured to its mounting pad, as described in this procedure.



CAUTION 2

Potential equipment damage and personal injury

When the cabinet is not secured on the mounting pad, its stability is greatly reduced. Do not open the front or rear doors unless the cabinet is firmly secured to the shipping pallet or the mounting pad.



CAUTION 3

Potential equipment damage

Use special care to prevent damage when handling the sealant kit material.

Tools and materials required

- one hacksaw or similar cutting tool to cut the cable conduit
- one 2.5-inch (63.5 mm) trade size permanent virtual circuit (PVC) conduit straight coupling (supplied with the ac power pedestal option)
- one sealant kit supplied with the cabinet

—continued—

Procedure 2-2 (continued)
Preparing the pad

Action

Step	Action
1	<p>Cut and trim the conduits protruding from the top of the pad to the following heights above the concrete pad (see Figure 2-3 and Figure 2-4):</p> <ul style="list-style-type: none"> AC entrance: 2 in. (50.8 mm) above pad surface Pedestal conduit: 2.25 in. (57.15 mm) from inside bottom of pedestal (cabinets equipped with ac power pedestal) All other conduits: Cut flush with pad surface
2	<p>Mount the 2.5 in. (63.5 mm) PVC straight coupling on the ac entrance conduit protruding from the pad (for cabinets equipped with the pedestal option).</p>

Figure 2-3
Conduit cuts in the ac pedestal enclosure

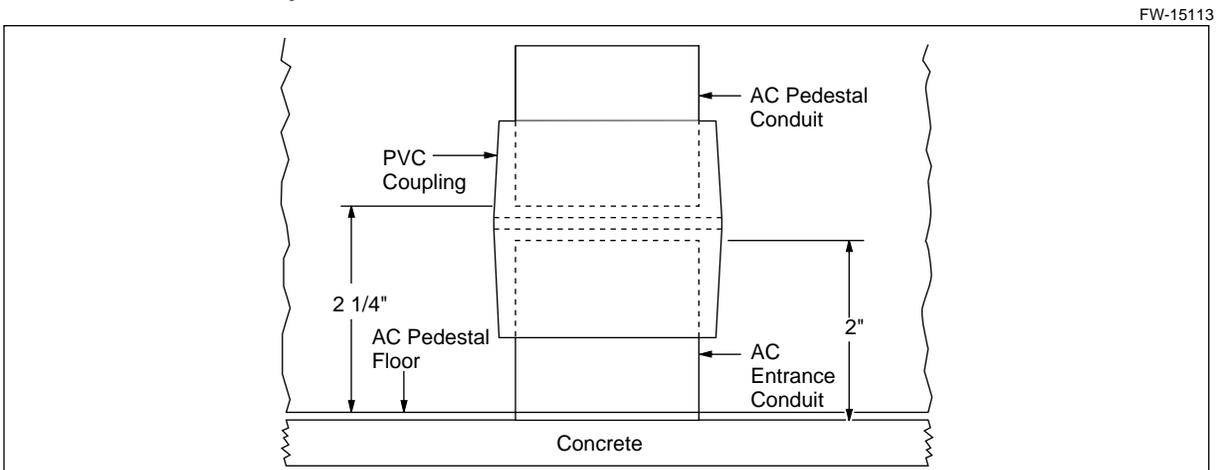
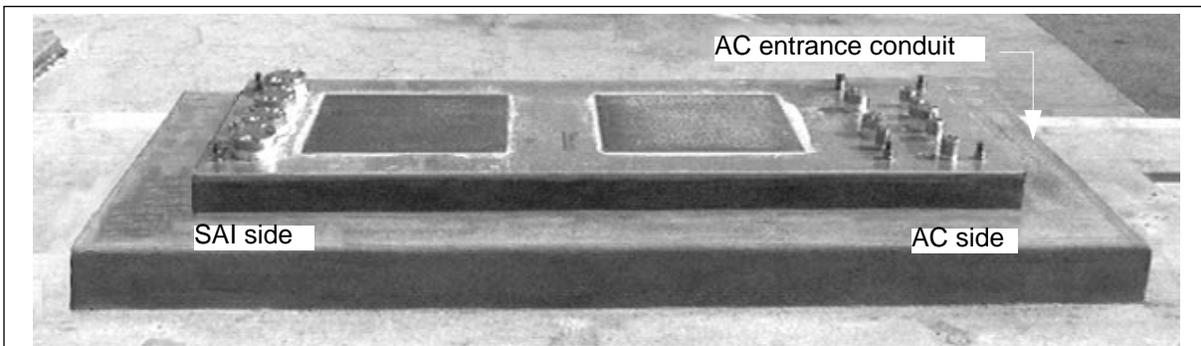


Figure 2-4
Pad layout and preparation



—continued—

2-12 Installing the cabinet

Procedure 2-2 (continued)
Preparing the pad

- | Step | Action |
|------|---|
| 3 | Remove and save the plastic cap plugs, nuts, washers and support angles from the anchoring bolts on the mounting pad. |
| 4 | Clear the pad of any debris and make sure that the pad is level and free of obstructions. |

	<p>CAUTION Install the anchor plate sealant kit</p> <p>The anchor plate sealant kit must be installed before the cabinet is lifted onto the mounting pad. Improper installation of the sealant kit may result in galvanic corrosion damage to the cabinet.</p>
---	---

- | | |
|---|--|
| 5 | Place the appropriate sealant kit pieces (see Table 2-5 and Figure 2-5) from anchor plate sealant kit into position on the pad after removing the paper backing. |
| 6 | Ensure that all sealant kit cutouts are aligned with the pad conduits and that each piece lies flat on the pad with no wrinkling or folded edges.

Note: Middle section sealant pieces must be placed with the untreated edge (the paper lip having no sealant material attached) toward the outside edge of the pad so that the treated edges butt up against each other in the center of the pad. |
| 7 | Reinstall the red protective cap plugs on the cabinet anchor bolts in the concrete pad. |

Table 2-5
Pad/sealant kit (P0738444)

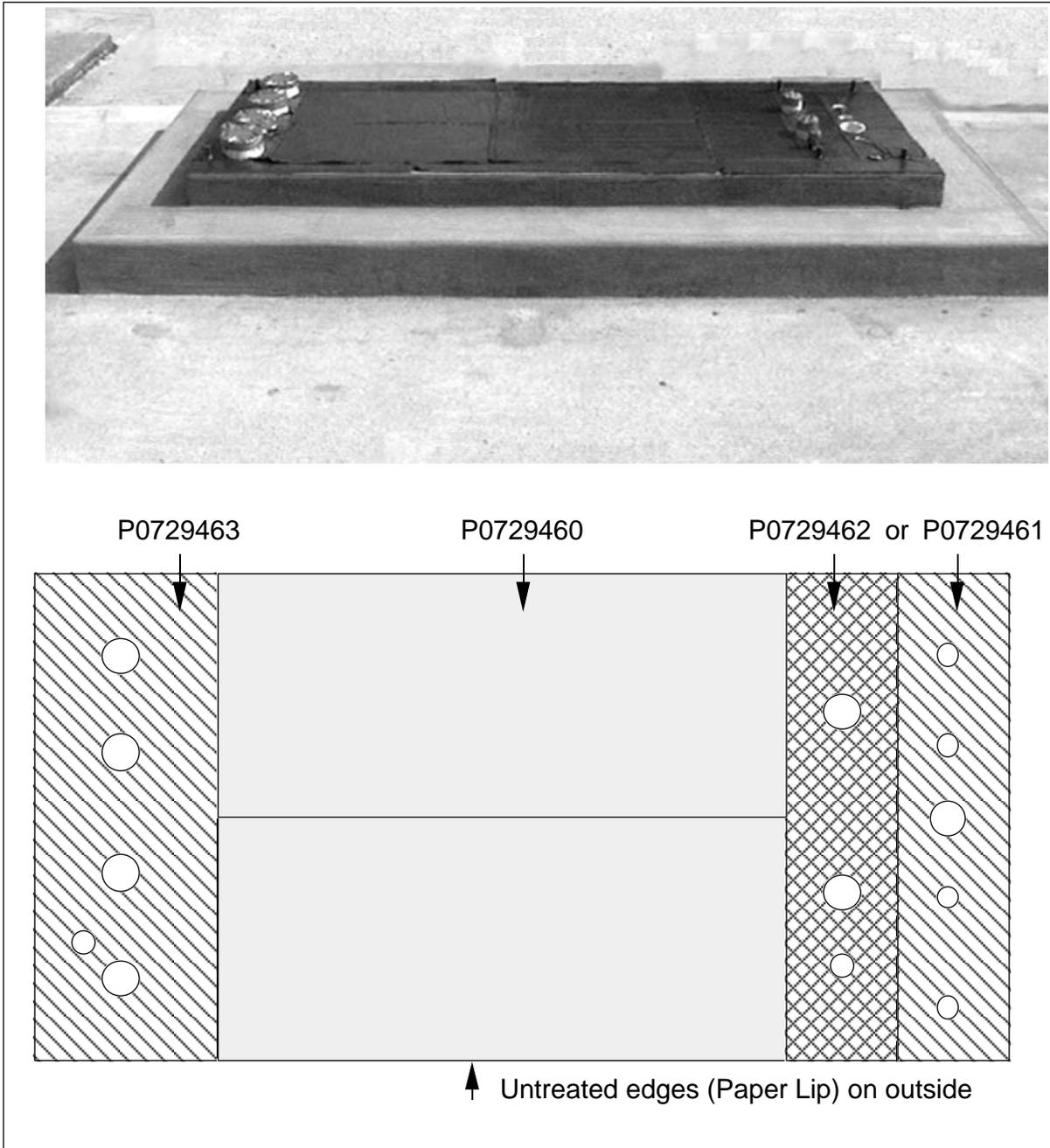
Pad	QTY P0738460 middle sections	QTY P0738461 ac side sections	QTY P0738462 ac side sections	QTY P0738463 termination side sections
P0729558	2		1	1
P0729559	2	1		1
P0729560	2		1	1
P0729561	2		1	1

—continued—

Procedure 2-2 (continued)
Preparing the pad

Step	Action
------	--------

Figure 2-5
Sealant kit installed



—end—

Procedure 2-3

Preparing the cabinet for installation

Use this procedure to connect the lifting crane to the S800A cabinet and to prepare the cabinet for installation.

Lifting and moving the cabinet

Before lifting and moving the cabinet, remove any debris from the pad. Verify that the pad is level and free from obstructions.

Observe the following warnings and cautions when lifting and moving the cabinets:



DANGER

Safety hazard and cabinet lifting failure

Do not lift the cabinet without following proper lifting procedures.

Failure to comply with this warning can cause serious or fatal bodily injury and damage to the cabinet.



CAUTION

Potential equipment damage and personal injury

Barricade the lift area. Do not allow cars to be parked within twenty-five feet of the lift radius. All persons within the barricaded area should wear a hard hat and steel-toed safety shoes. Do not physically assist the rigging crew. Only the crane rigging crew performs crane setup and rigging procedures.



CAUTION

Possible equipment damage

Do not lift cabinet with batteries installed.



CAUTION

Possible equipment damage

Align the hoist line over the center of gravity of the load to eliminate load swinging. Do not exceed the lifting capacity of the crane.

—continued—

Procedure 2-3 (continued)

Preparing the cabinet for installation



CAUTION

Risk of galvanic corrosion

The anchor plate sealant kit must be installed before the cabinet is lifted on the mounting pad. Improper installation of the sealant kit can cause galvanic corrosion damage to the cabinet.

Securing the cabinet to the mounting pad

Observe the following cautions before securing the cabinet to the mounting pad:



CAUTION

Potential equipment damage and personal injury

No equipment should be installed until the cabinet is firmly secured to its mounting pad.



CAUTION

Potential equipment damage and personal injury

Do not open the front or rear doors unless the cabinet is firmly secured to the shipping pallet or the mounting pad.

Removing eyebolt from cabinet

Observe the following caution before removing the eyebolt from the cabinet:



CAUTION

Risk of equipment damage

Discard eyebolts removed from cabinet after lifting. Never reuse eyebolts.

—continued—

Procedure 2-3 (continued)

Preparing the cabinet for installation

Crane operation precautions

Adhere to all local, state, and federal safety standards for crane operations. Ensure the following guidelines are observed:

- Set up the crane on firm footing.
- Extend the outriggers, block the floaters and insert safety pins.
- Ensure that the crane is “off rubber” during the lift.
- Ensure that the crane is level before lifting to eliminate tipping.
- Do not place any body part underneath the load at any time and do not stand on the load.
- Use tag lines to maneuver the load.

Eyebolt precautions

Before lifting cabinet, ensure that eyebolts are free of the following visible defects:

- bent or distorted eye or shank
- obvious wear
- worn and/or distorted threads
- cracks

Cabinet weights

Table 2-6 lists the weight of the S800A cabinets equipped with each of the two optional roof assemblies.

Table 2-6
Cabinet weights

Cabinet (without batteries)	Weight
Equipped with air induction roof	2000 lb (907.2 kg)
Equipped with heat exchanger roof	2200 lb (997.9 kg)

—continued—

Procedure 2-3 (continued)

Preparing the cabinet for installation

Prerequisites for installation

The operating company is responsible for the choice of site and compliance with local regulations such as the applicable electrical codes, right-of-way easements, and noise requirements.

Installation procedures assume the following:

- All hardware and materials are available, and have been checked for completeness and readiness for the installation.
- The correct cabinet pad has been poured and cured at the site.
- The cabinet pad has been prepared as described in Chapter 1, “Installing the pad.”
- All the required drawings, local installation instructions, job specifications, and other documentation are available and ready for use.
- Procedure 2-1 on page 2-7, “Unpacking the cabinet” has been completed.
- Procedure 2-2 on page 2-10, “Preparing the pad” has been completed.

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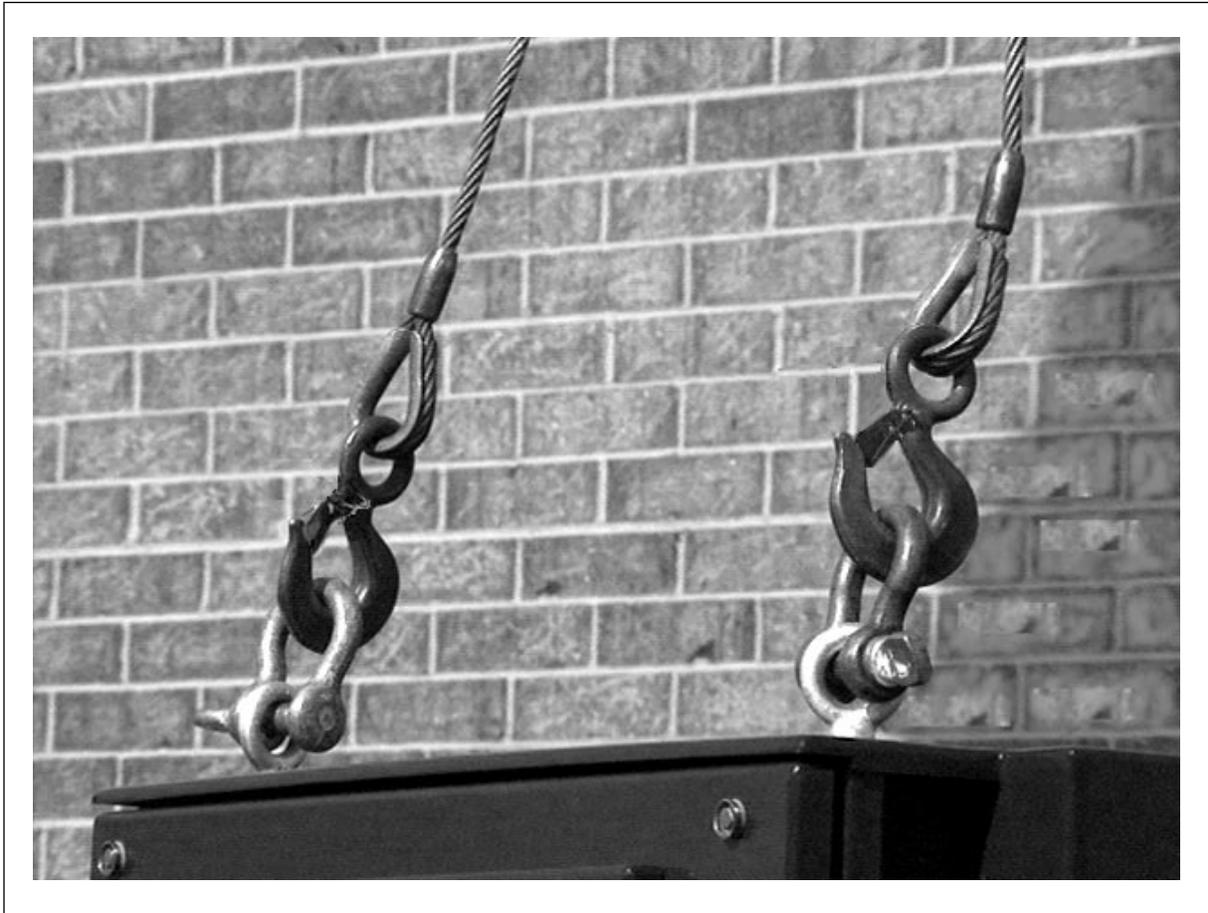
2-18 Installing the cabinet

Procedure 2-3 (continued)
Preparing the cabinet for installation

Action

Step	Action
1	Securely attach the lifting sling to the cabinet eyebolts as seen in Figure 2-6. The load should always be applied to the eyebolts in the plane of the eye (parallel to the "O"), not at any other angles. See Figure 2-7 on page 2-19. Note: Figure 2-8 on page 2-20 shows an improper way to attach to the cabinet using one cable.
2	Verify that the eyebolts are firm against the mating surface. If necessary, use a 0.03 in. - 0.06 in. steel washer or spacer between the eyebolts and the cabinet to orient the eyebolts in the direction of the load.

Figure 2-6
Lifting sling attached to eyebolts

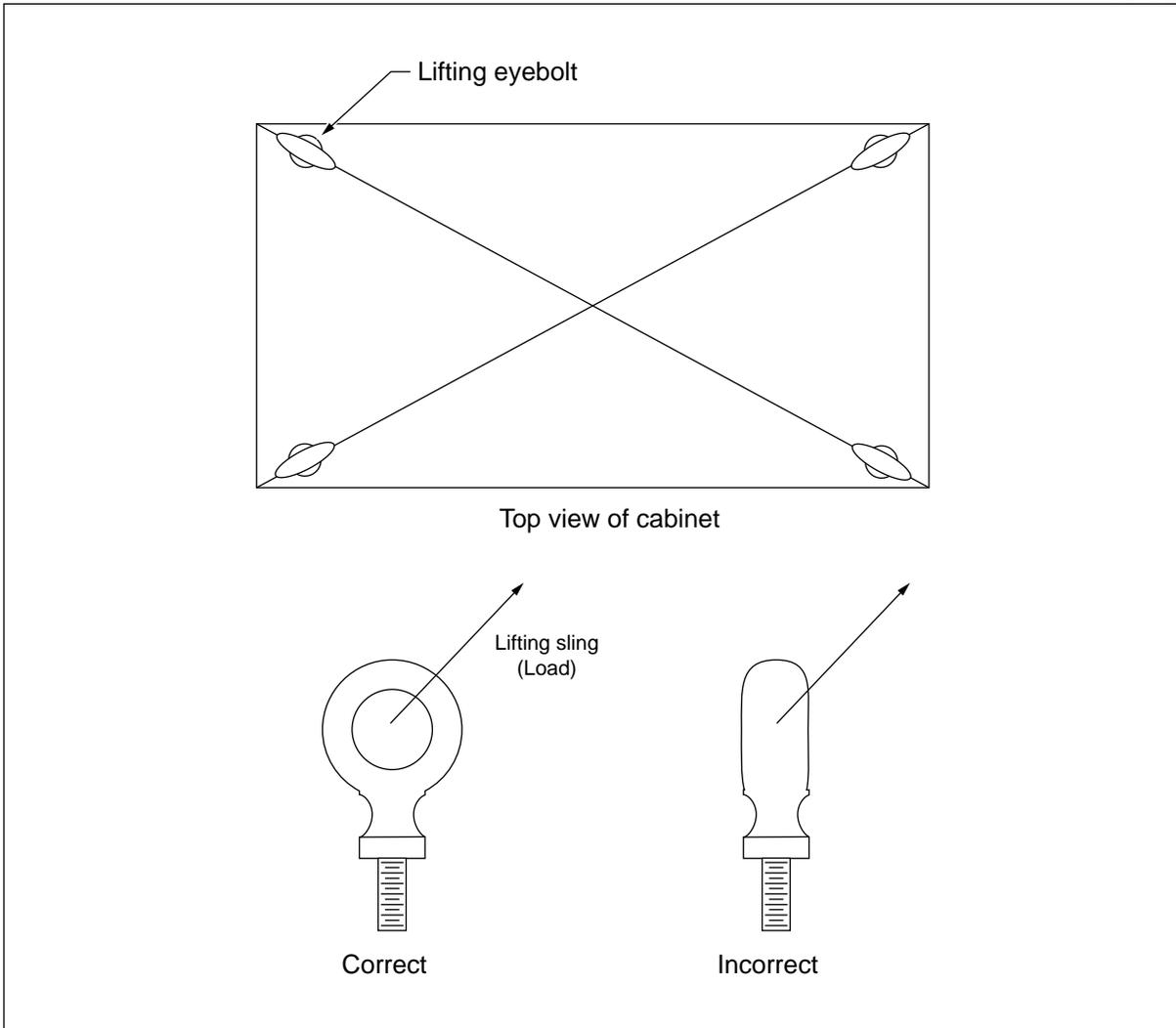


—continued—

Procedure 2-3 (continued)
Preparing the cabinet for installation

Figure 2-7
Lifting sling (load) orientation to eyebolts

FW-16367



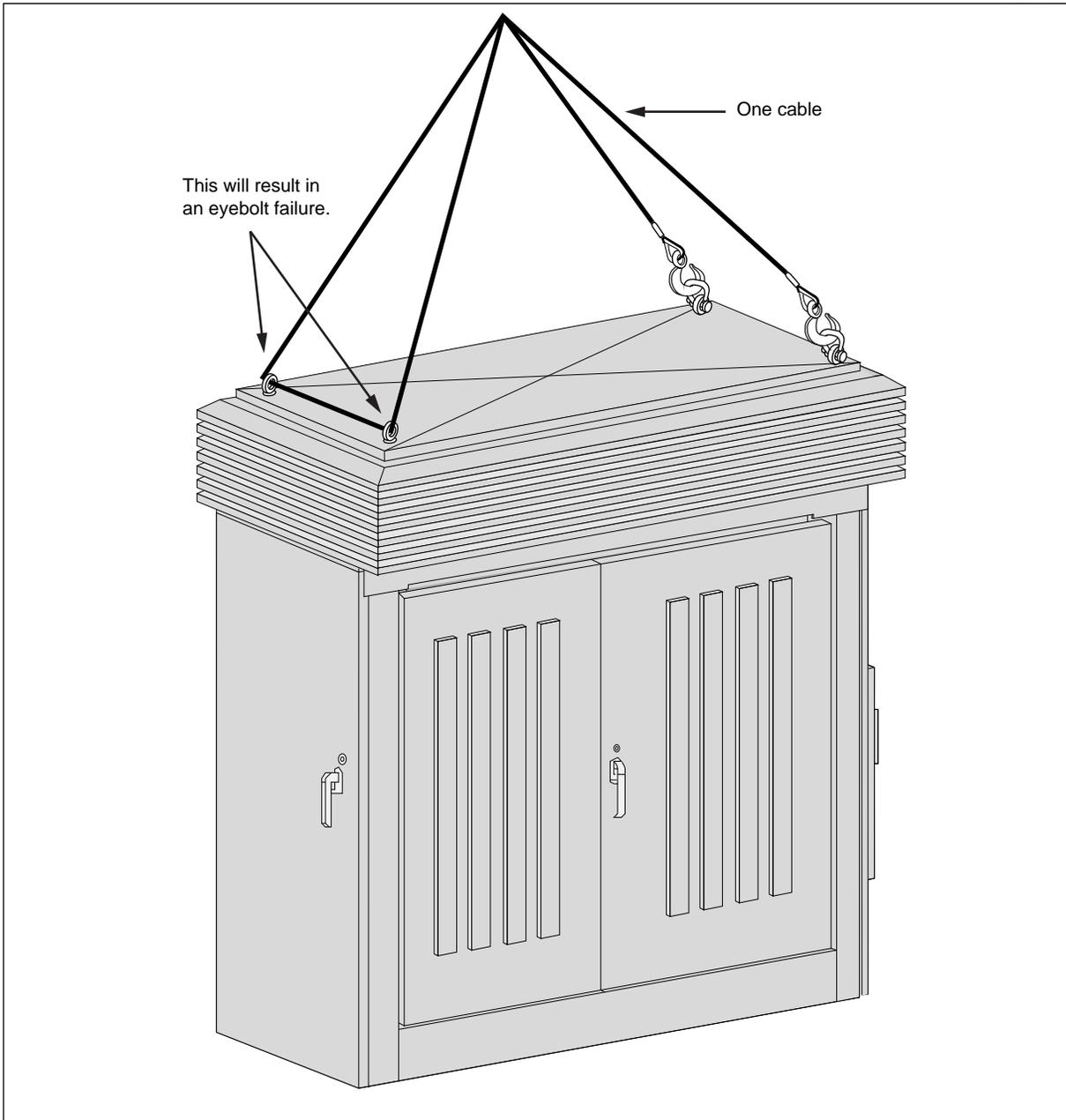
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2-20 Installing the cabinet

Procedure 2-3 (continued)
Preparing the cabinet for installation

Figure 2-8
Improper cabinet lifting

FW-16344



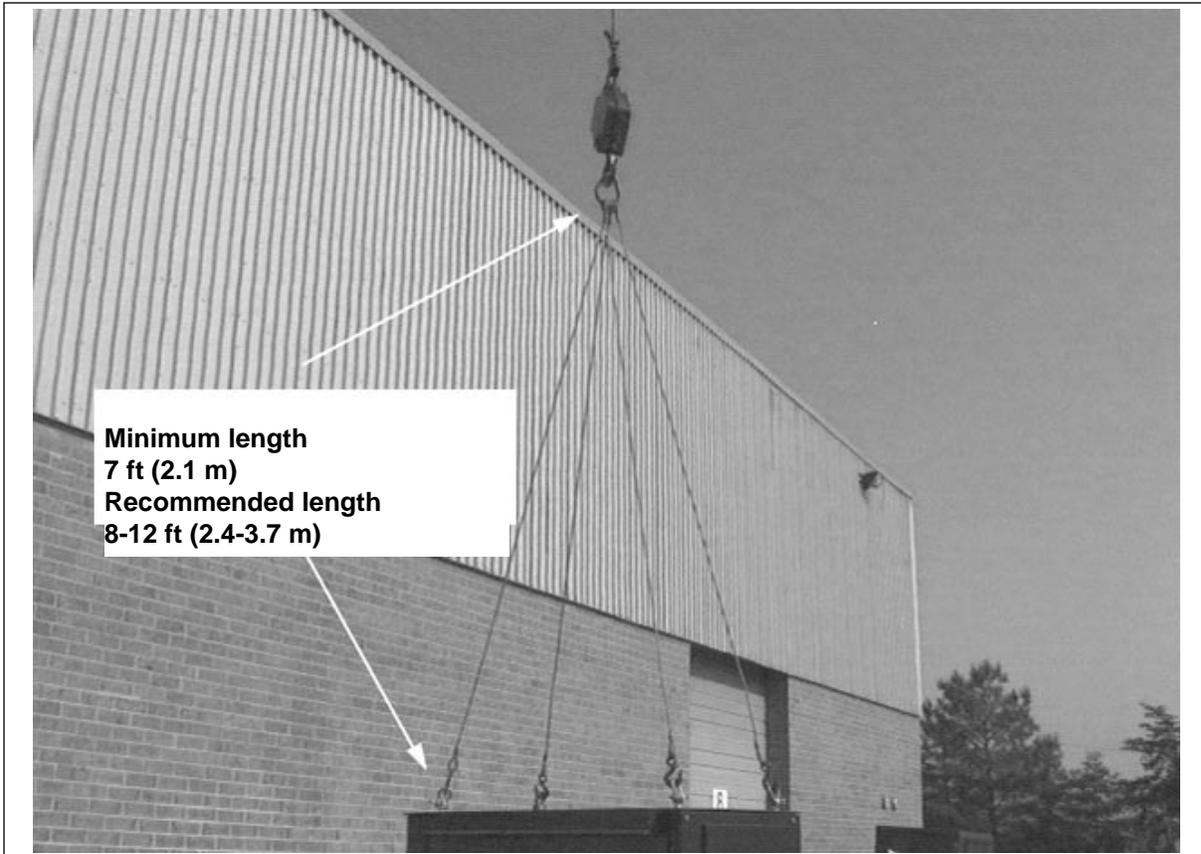
—continued—

Procedure 2-3 (continued)

Preparing the cabinet for installation

Step	Action
3	Ensure that the lifting sling is at least 7 ft (2.1 m). Nortel Networks recommends a length of 8 to 12 ft (2.4 to 3.7 m). See Figure 2-9.

Figure 2-9
Lifting cable sling



—continued—

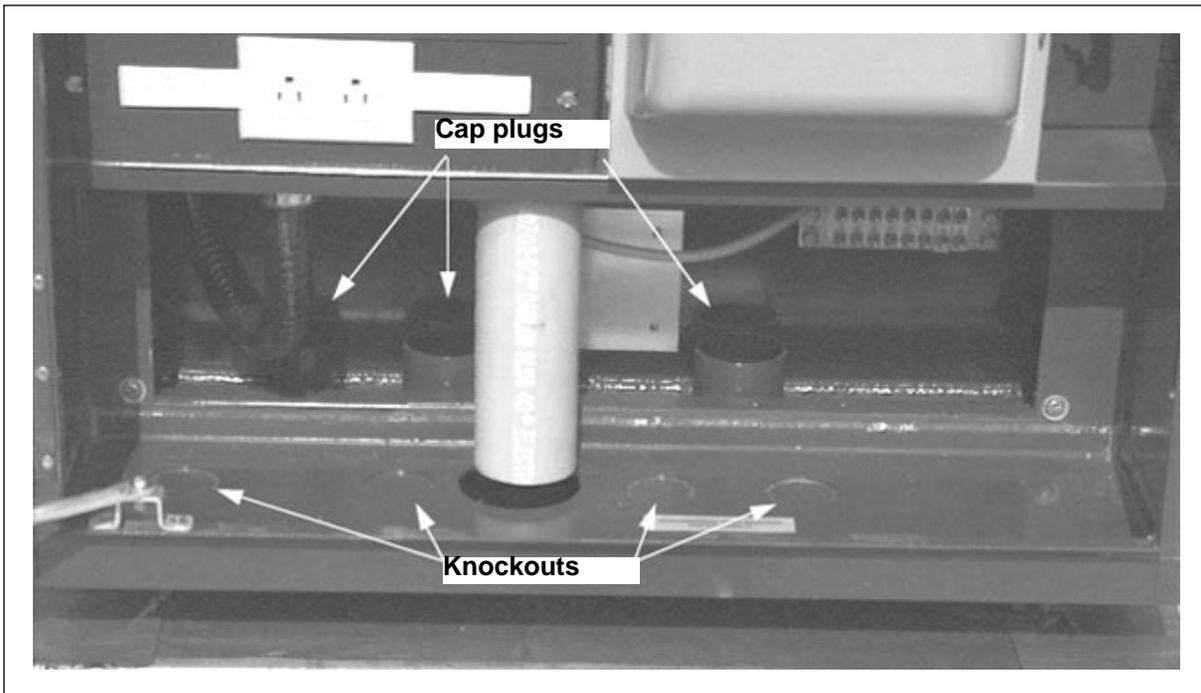
2-22 Installing the cabinet

Procedure 2-3 (continued)

Preparing the cabinet for installation

Step	Action
4	Open the doors on the termination and ac sides of the cabinet.
5	Remove the pallet mounting bolts (four on cabinets without the ac pedestal, and six on cabinets with the ac pedestal) located at the bottom of the cabinet. The cabinet is disengaged from the pallet.
6	Lift the cabinet from the shipping pallet to a height of approximately six inches (or as locally required).
7	Remove the required conduit knockouts and cap plugs from the bottom of the termination and ac sides of the cabinet (and the bottom of the ac pedestal if attached). See Figure 2-11.

Figure 2-10
Conduit knockouts - AC side



—end—

Procedure 2-4

Mounting the cabinet on the pad

Use this procedure to mount the prepared cabinet on the pad.

Precautions

The following safety precautions should be observed at all times during the cabinet installation procedures:

**CAUTION 1****Potential equipment damage and personal injury**

No equipment should be installed until the cabinet is firmly secured to its mounting pad, as described in this procedure.

**CAUTION 2****Potential equipment damage and personal injury**

When the cabinet is not secured on the mounting pad, its stability is greatly reduced. Do not open the front or rear doors unless the cabinet is firmly secured to the shipping pallet or the mounting pad.

**CAUTION 3****Potential equipment damage**

Use special care to prevent damage when handling the sealant kit material.

—continued—

Prerequisites for installation

The operating company is responsible for the choice of site and compliance with local regulations such as the applicable electrical codes, right-of-way easements, and noise requirements.

Installation procedures assume the following:

- All hardware and materials are available, and have been checked for completeness and readiness for the installation.
- The correct cabinet pad has been poured and cured at the site.
- All the required drawings, local installation instructions, job specifications, and other documentation are available and ready for use.
- Procedure 2-1 on page 2-7, Procedure 2-2 on page 2-10, and Procedure 2-3 on page 2-14 have been completed.

Tools and materials required

- wrench, 6-8 in.h (15–20 cm) adjustable or box-end 5/8 in. (15.875 mm)
- socket driver with 9/16 in. (14.287 mm) deep-well socket
- leveling shims
- conduit plugging compound
- caulking compound

—continued—

Procedure 2-4 (continued)
Mounting the cabinet on the pad

Action

Step	Action
1	Ensure that hard hats are worn by all personnel during the lift.
2	Lift the cabinet using the crane.



CAUTION

Safety hazard

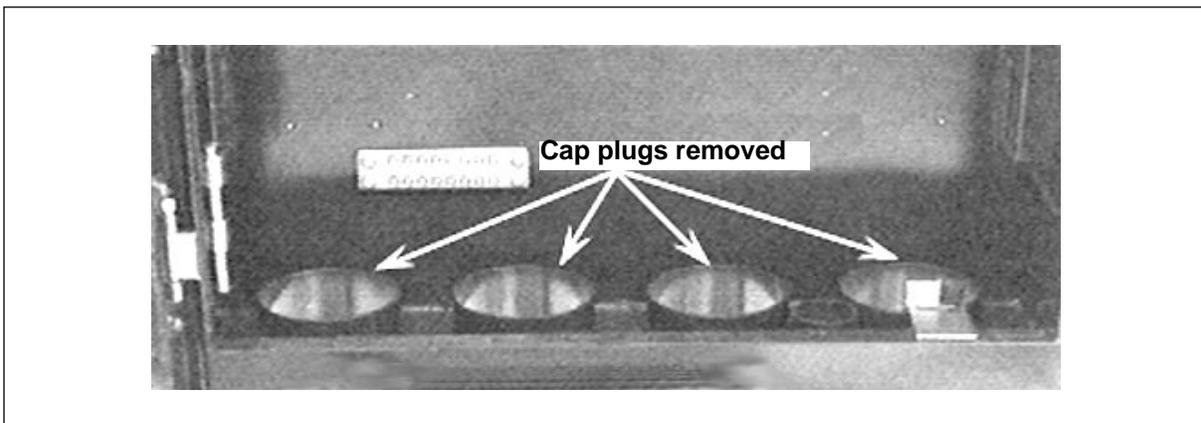
Do not position yourself underneath the load. Exercise extreme caution when routing existing outside plant (OSP) cables through the bottom of the cabinet.

- | | |
|---|--|
| 3 | Position the cabinet above the concrete pad. |
| 4 | Lower the cabinet over the anchoring bolts. |

Note: If OSP cables are already installed through the pad surface, route them through the appropriate openings prior to setting the cabinet completely down on the pad.

The cabinet must be lowered onto the pad in a level position parallel with the surface of the pad and in alignment with the anchoring bolts and conduits protruding from the pad. See Figure 2-11.

Figure 2-11
Conduit knockouts - termination side



—continued—

Procedure 2-4 (continued)

Mounting the cabinet on the pad

Step	Action
5	Position the two Durometer rubber pad strips where the left and right bolt openings in the ac pedestal (if installed) will sit on the concrete pad (see Figure 2-12 on page 2-27).
6	Observe the cabinet-to-pad alignment as the cabinet is lowered to the pad.
7	Lower the cabinet into place on the pad using the following precautions: <ul style="list-style-type: none">• Align the conduits with the proper cabinet conduit entry holes.• Align the ac entry conduit in the pad (with the coupling attached) with the ac entry conduit inside of the ac pedestal, if installed.• Align one Durometer pad on the right side of the enclosure, and the other pad on the left side of the enclosure (see Figure 2-12 on page 2-27).
8	Ensure that the cabinet sits securely on the pad and is fully seated on all anchor bolts (see Figure 2-13 on page 2-28).
9	Check leveling with a spirit level.



CAUTION

Possible cabinet misalignment

Using shims to level the cabinet can cause the doors or swing bays to become misaligned. Use shims only as necessary.

10 Place shims under the edge of the cabinet if required for leveling. If shims are used, caulk the cabinet-to-pad interface.

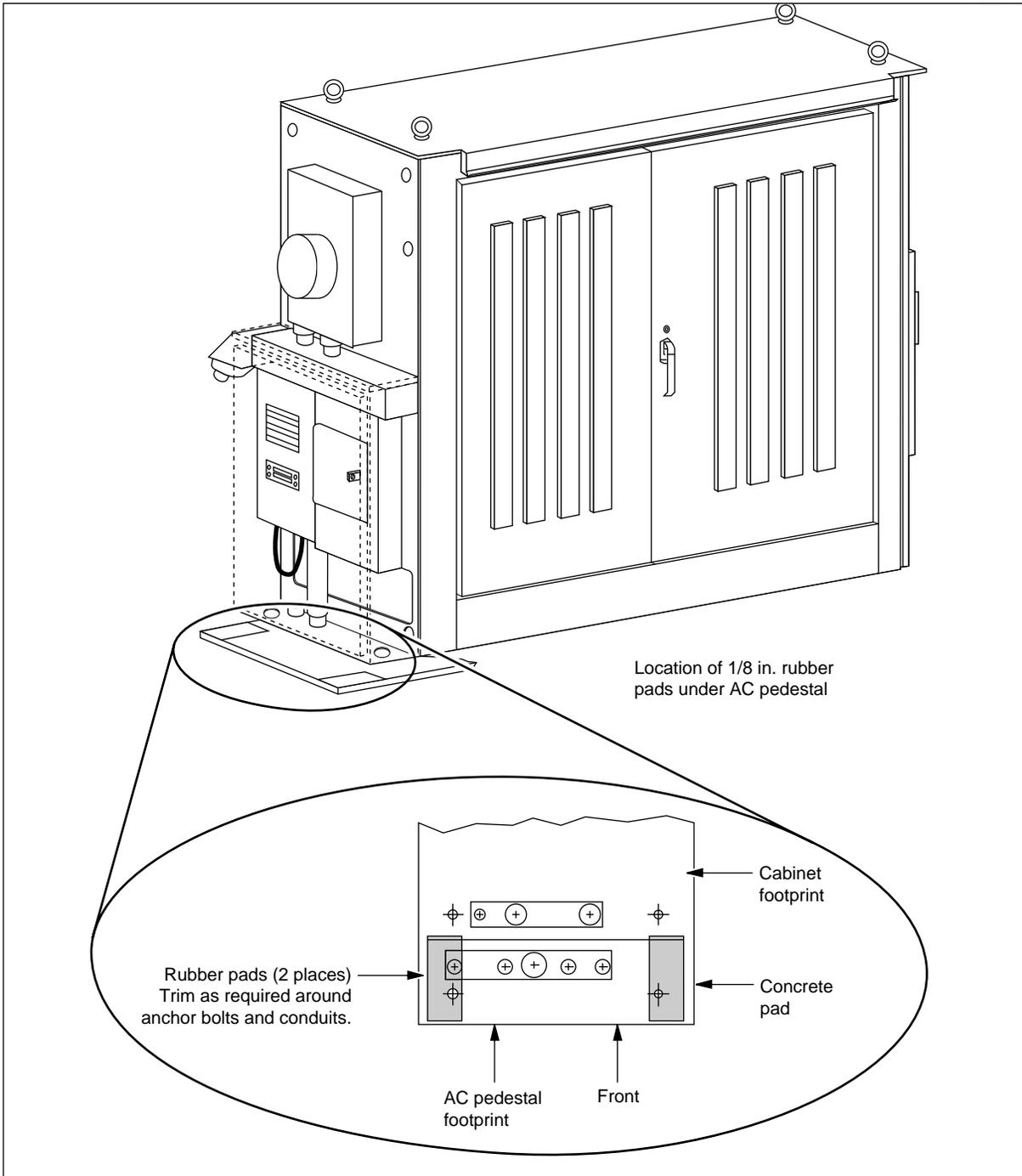
Note: Use caulking completely around the cabinet bottom as per local practices for material and workmanship.

—continued—

Procedure 2-4 (continued)
Mounting the cabinet on the pad

Figure 2-12
Positioning the Durometer pedestal pads

FW-15116



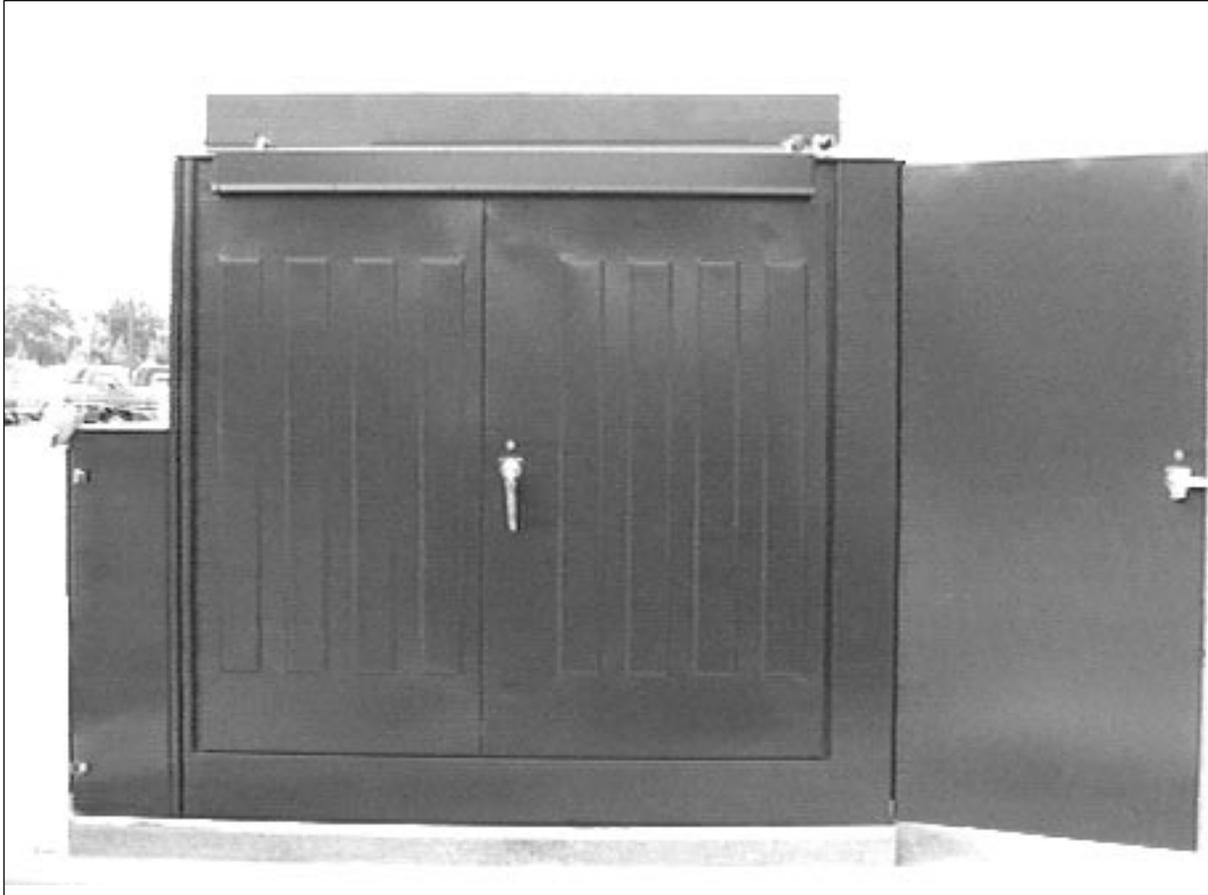
—continued—

2-28 Installing the cabinet

Procedure 2-4 (continued)
Mounting the cabinet on the pad

Step Action

Figure 2-13
Cabinet placement on the pad

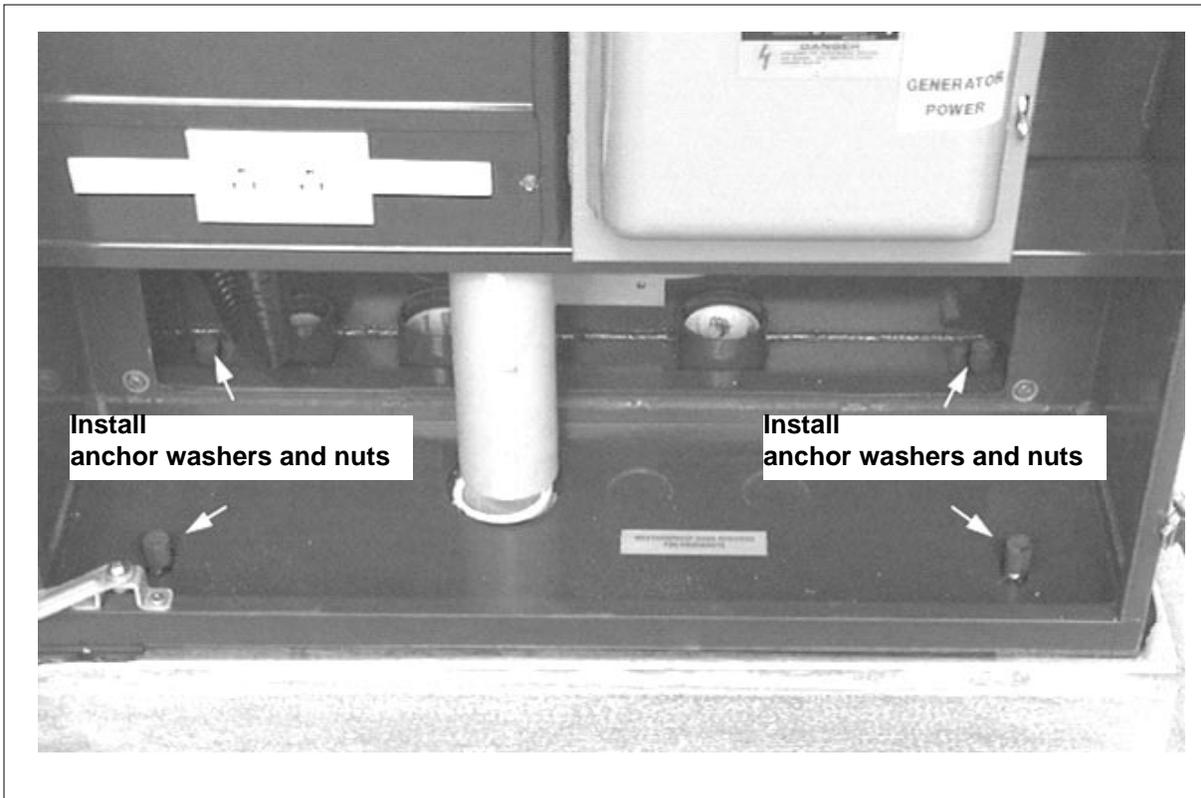


—continued—

Procedure 2-4 (continued)
Mounting the cabinet on the pad

Step	Action
11	Remove and discard the red cap plugs on the pad anchor bolts.
12	Install and tighten the two anchor bolt washers and nuts on the termination compartment side and the two anchor bolt washers and nuts on the ac side of the cabinet. Note: Tighten the nuts to 50 ft lb torque.
13	If the attached ac pedestal option is installed, also install and tighten the two anchor bolt washers and nuts (see Figure 2-14).

Figure 2-14
Cabinet AC side anchor bolt install



- 14 Disconnect the lifting cable sling from the lifting eyebolts.
- 15 Remove the four lifting eyebolts and discard.

—continued—

2-30 Installing the cabinet

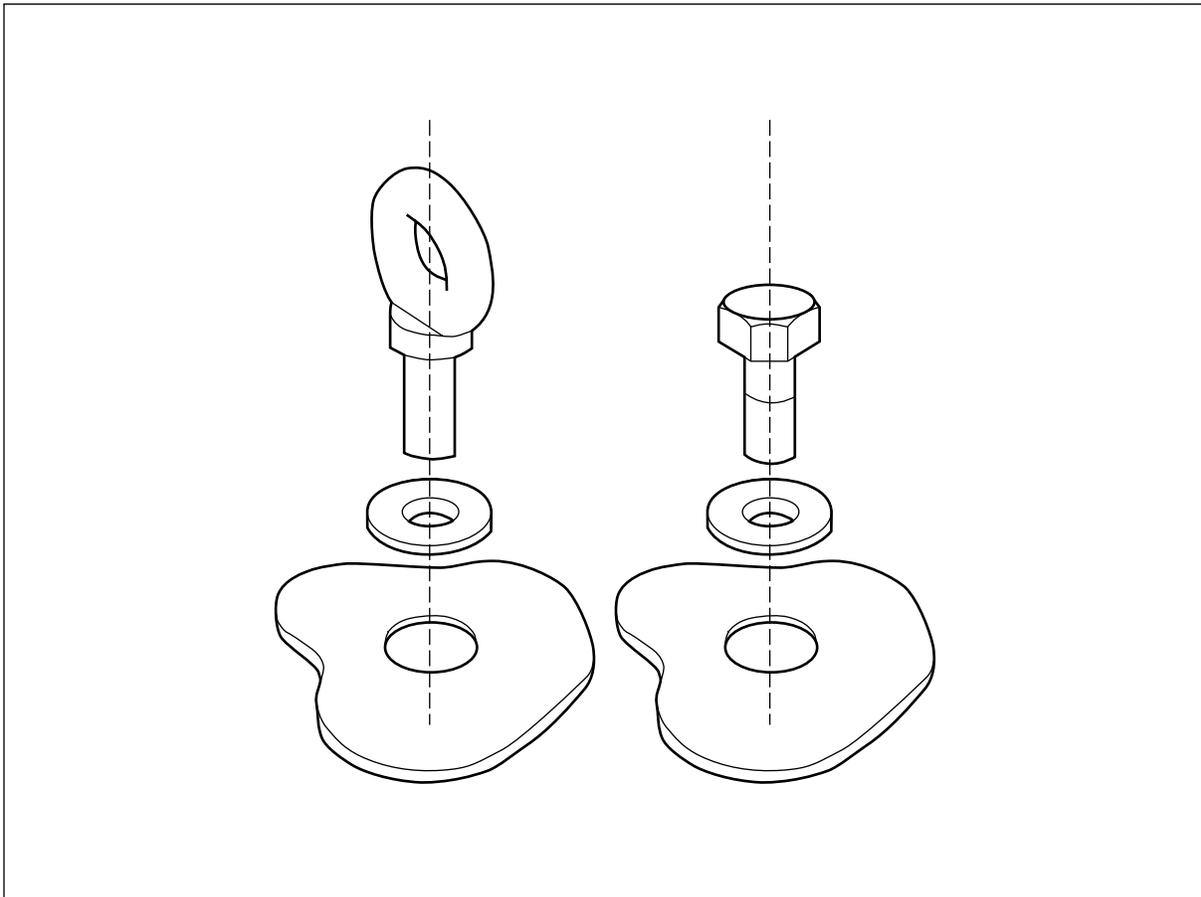
Procedure 2-4 (continued)

Mounting the cabinet on the pad

Step	Action
16	Replace the bolts with the stainless steel hex head bolts and the existing washers that are included with each cabinet (see Figure 2-15). Note: Do not remove the desiccant pouches from the bottom of the compartments until commercial power is connected.

Figure 2-15
Eyebolt removal

FW-15117



- 17 Seal around all conduit entrances and cables, using plug compound or equivalent to ensure a watertight seal against moisture.

—end—

Procedure 2-5

Enabling the door locks

Use this procedure to enable the S800A door locks if tool locks are required.

If the internal door locks are not used, it is the responsibility of the operating company to furnish pad locks for all four doors.

Prerequisites for installation

The operating company is responsible for the choice of site and compliance with local regulations such as the applicable electrical codes, right-of-way easements, and noise requirements.

Installation procedures assume the following:

- All hardware and materials are available, and have been checked for completeness and readiness for the installation.
- The correct cabinet pad has been poured at the site.
- The cabinet pad has been prepared as described in Chapter 1, “Installing the pad” and has cured.
- The required drawings, local installation instructions, job specifications, and other documentation are available and ready for use.
- Procedure 2-1 through Procedure 2-4 in this chapter have been completed.

Tools required

When the door locks are enabled, the front and rear electronics and the ac compartment doors may be unlocked with an:

- AT&T 840841324 or equivalent hex key tool

The outside plant compartment may be unlocked with a:

- 216-type can wrench or 10660-001 Harris can wrench

—continued—

2-32 Installing the cabinet

Procedure 2-5 (continued)

Enabling the door locks

Action

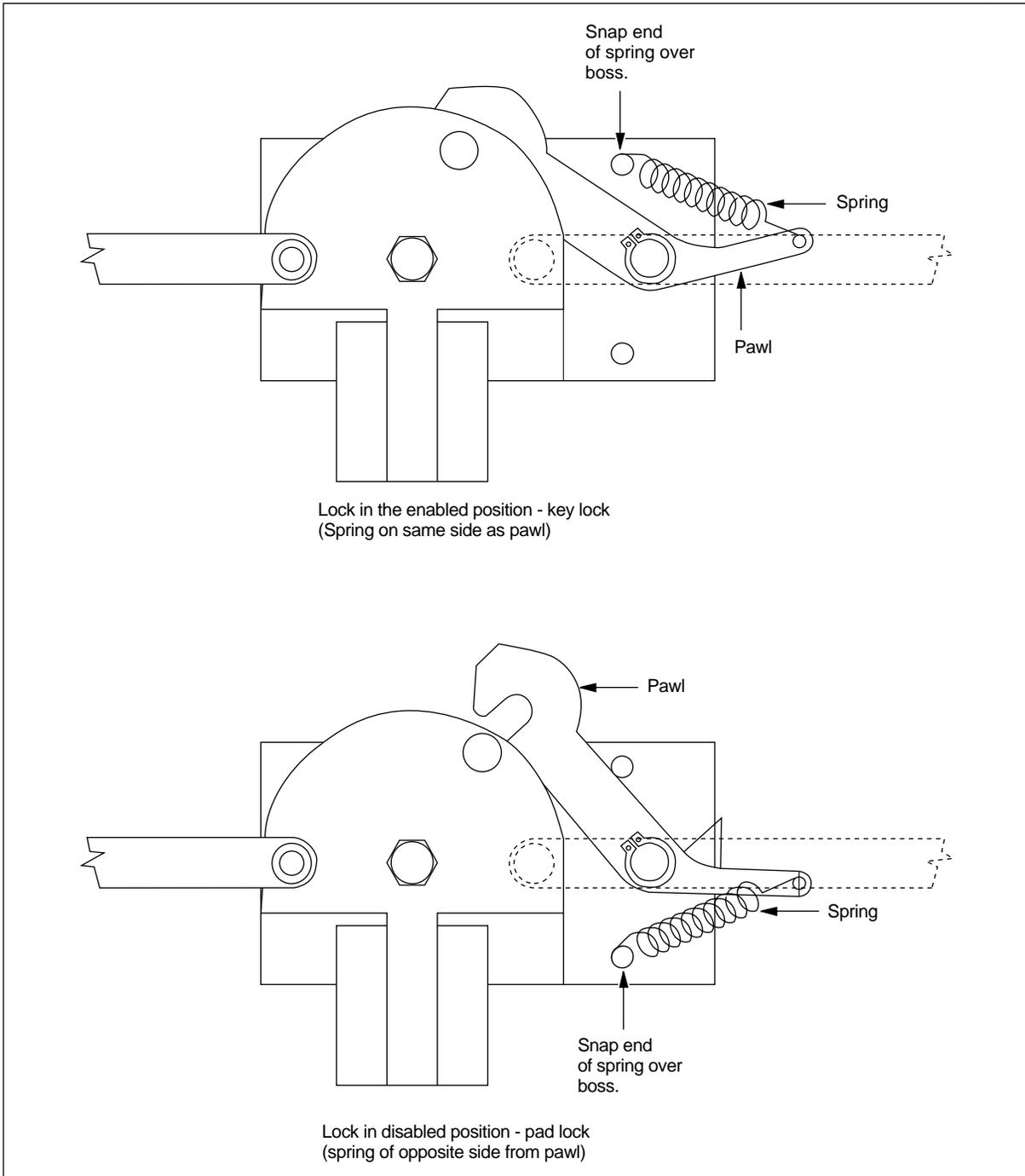
Step	Action
1	Open the electronics compartment doors.
2	On the door locking mechanism, move the spring from the disable to enable position (see Figure 2-16 on page 2-33). Note: All door locks have been disabled at the factory.
3	Continue the cabinet installation process (see Chapter 3, “Connecting commercial power”).

—continued—

Procedure 2-5 (continued)
Enabling the door locks

Figure 2-16
Enabling the door locks

FW-15118



—end—

Connecting commercial power

This chapter provides information for connecting commercial power to the ac load box option and to the power pedestal option for the Series 800A cabinet.

The Series 800A cabinet is equipped with one of two optional ac input panels: the ac load box or the ac power pedestal. Use these procedures to connect the cabinet to the local commercial ac source.

How to use this chapter

In the following table, you will find a list of the procedures to connect the commercial power to the AccessNode S800A Outside Plant (OSP) cabinet. Perform the procedures in the order listed. If you cannot successfully complete these procedures, contact your next level of support.

Chapter task list

Task	See
Connecting earth ground to the ac load box	Procedure 3-1 on page 3-5
Wiring the ac load box as a branch circuit	Procedure 3-2 on page 3-7
Wiring the ac load box as a main service entrance	Procedure 3-3 on page 3-10
Connecting earth ground to the ac power pedestal	Procedure 3-4 on page 3-13
Wiring the ac power pedestal	Procedure 3-5 on page 3-17

Prerequisites for installation

Before you connect the commercial power, complete these tasks.

- Mount the cabinet on the selected concrete pad as defined in Chapter 2, “Installing the cabinet”.
- Ensure that all hardware and materials are available and have been checked for completeness and readiness for the installation.
 - locally purchased 6 AWG tinned copper bare wire, length dependent on the proximity of the ground rod to the cabinet (the cabinet will require approximately 4 ft (1.2 m) internal to the ac side)
 - one T&B 3302M type 1/2-inch NPT knockout connector or equivalent
 - one 2-inch NPT knockout connector or equivalent

Precautions

The following safety precautions should be observed at all times during the commercial power connection procedures:

- Do not open the front or rear doors until the cabinet is firmly secured to the mounting pad described in Chapter 2, “Installing the cabinet”.
- Observe all National Electrical Code (NEC) and local codes for electrical wiring.



CAUTION 1 **Electrical shock hazard**

The procedures listed in this chart should be done by a qualified electrician. The procedures in this chapter are recommended guidelines; be sure to follow all local codes for wiring procedures.



CAUTION 2 **Fire hazard**

Remove all paper and any other combustible materials from inside the cabinet before the cabinet is powered up. Failure to comply with this warning could result in a fire.

AC power

The cabinet operates within specification with voltage range variations of 190 to 253 Vac (measured between Line 1 (L1) and Line 2 (L2) of the ac input leads) and a frequency variation range of 55 to 65 Hz.

Table 3-1 shows the commercial ac power requirements for the S800A.

Table 3-1
AC power requirements

Voltage	Amperage	Phase	Frequency
AC load box option			
115/230 Vac	60 A	Three-wire, 1-phase	55-60 Hz
AC power pedestal option			
115/230 Vac	100 A	Three-wire, 1-phase	55-60 Hz

Cable entry

The S800A cabinet is constructed with cable conduit entry ports located at the bottom of the end compartments of the cabinet.

Note: All trade sizes listed are based on Schedule 40 permanent virtual circuit (PVC).

Load box option

For the load box option, there are two 2.50-inch openings for 2.00-inch trade size conduit and a 1.50-inch opening for 1.00-inch trade size conduit.

The ac power enters the S800A cabinet via conduit holes located on the bottom left side of the ac power compartment.

Table 3-2 shows the conduit openings in the ac load box.

Table 3-2
AC load box conduit openings

Opening size	Conduit trade size	Function
2.50 inches (6.35 cm)	2.0 inches (5.08 cm)	Miscellaneous - dc feed, when required
2.50 inches (6.35 cm)	2.0 inches (5.08 cm)	AC entrance - commercial ac feed
1.50 inches (3.81 cm)	1.0 inches (2.54 cm)	Ground - earth ground rod connection entrance

AC power pedestal

For cabinets equipped with the optional attached ac power pedestal, there is a 3.50-inch opening for ac supply and four 2.00-inch openings for miscellaneous cable entry and grounding cable entry as required.

Table 3-3 shows the conduit openings in the ac power pedestal.

Table 3-3
AC power pedestal conduit openings

Opening size	Conduit trade size	Function
3.50 inches (8.89 cm)	2.50 inches (6.35 cm)	AC entrance - commercial ac feed
2.00 inches (5.08 cm)	1.25 inches (3.18 cm)	Miscellaneous - dc feed or grounding
2.00 inches (5.08 cm)	1.25 inches (3.18 cm)	Miscellaneous - dc feed or grounding
2.00 inches (5.08 cm)	1.25 inches (3.18 cm)	Miscellaneous - dc feed or grounding
2.00 inches (5.08 cm)	1.25 inches (3.18 cm)	Miscellaneous - dc feed or grounding

Procedure 3-1

Connecting earth ground to the ac load box

Use this procedure to connect the earth ground to the S800A cabinet.

The cabinet earth ground rod is normally buried in the ground adjacent to the cabinet. Observe local electrical codes for buried grounding techniques and requirements.

Tools required

- voltmeter
- one medium flat blade screwdriver
- one small flat blade screwdriver
- one wire stripper for 6 AWG, 10 AWG and 12 AWG wire

Material required

- one T&B 3302M type 1/2-inch NPT knockout connector or equivalent

Precautions

The following safety precautions should be observed at all times during the cabinet installation procedures:

- Do not open the front or rear doors until the cabinet is firmly secured to the mounting pad as described in Chapter 2, “Installing the cabinet”.
- Observe all NEC and local codes for electrical wiring.



CAUTION 1 **Electrical shock hazard**

The procedures listed in this chart should be done by a qualified electrician. The procedures outlined are recommended guidelines; be sure to follow all local codes for wiring procedures.



CAUTION 2 **Fire hazard**

Remove all paper and any other combustible materials from inside the cabinet before the cabinet is powered up. Failure to comply with this warning could result in a fire.

—continued—

3-6 Connecting commercial power

Procedure 3-1 (continued)

Connecting earth ground to the ac load box

Action

Step	Action
1	Unbolt and set aside the ac compartment lower panel.
2	Turn all circuit breakers in the ac load box to the OFF position.
3	Open the door and remove the distribution load center cover panel.

AC grounding electrode installation
(typical for a main service entrance panel):

	<p>CAUTION 3 AC grounding electrode installation For a main service panel entrance, an ac grounding electrode system requires bonding to an ac main service power neutral/ground bus. Consult the local power company or telco for code restrictions or NEC variations.</p>
---	---

- 4 Ensure that the ac ground rod or ring (electrode) has been installed per local, telco, and NEC code requirements.
- 5 Measure the ground-to-earth resistance.
Note: The ground-to-earth resistance must be less than or equal to 25 Ω .
- 6 Attach a 6 AWG tinned copper wire to the exterior cabinet ground rod.
- 7 Route the wire into the cabinet through the 1.00-inch conduit entrance located in the ac compartment.
- 8 Punch out a 1/2-inch NPT knockout on the left side of the load box using the first available 1/2-inch position.
- 9 Use a T&B 3302M type 1/2-inch NPT knockout bushing or equivalent to protect the ground wire from sharp edges.
- 10 Route the 6 AWG wire through the knockout bushing into the load center.
- 11 Attach the grounding electrode to the available grounding bus bar position in the load box (per NEC 250-23/81/84/91/92).

—end—

Procedure 3-2

Wiring the ac load box as a branch circuit

Use this procedure to wire the ac load box option as a branch circuit. Wire only the option specified by the job requirements.

Load box wiring options	Procedure
Branch circuit	Procedure 3-2 on page 3-7
Main service entrance panel	Procedure 3-3 on page 3-10

Tools required

- voltmeter
- one medium flat blade screwdriver
- one small flat blade screwdriver
- one wire stripper for 6 AWG, 10 AWG and 12 AWG wire

Material required

- one 2-inch NPT knockout connector or equivalent

Precautions

The following safety precautions should be observed at all times during the cabinet installation procedures:

- No equipment should be installed until the cabinet is firmly secured to its mounting pad, as described in Chapter 2, “Installing the cabinet”.
- Do not open the front or rear doors unless the cabinet is firmly secured to the mounting pad.
- Observe all NEC and local codes for electrical wiring.



CAUTION 1

Electrical shock hazard

The procedures listed in this chart should be done by a qualified electrician. The procedures outlined are recommended guidelines; be sure to follow all local codes for wiring procedures.

—continued—

3-8 Connecting commercial power

Procedure 3-2 (continued)

Wiring the ac load box as a branch circuit

Action

Step Action



CAUTION

Fire hazard

Remove all paper and any other combustible materials from inside the cabinet before the cabinet is powered up. Failure to comply with this warning could result in a fire.

- 1 Turn all circuit breakers in the ac load box to the OFF position.
- 2 Route the power and ground cabling from the external power source through approved conduit into the 2-inch conduit the bottom of the ac compartment.
Note: Reference local codes and NEC guidelines for branch circuit installation requirements.
- 3 Punch out an appropriate sized knockout on the left side of the load box for strain relief or conduit installation.
- 4 Route the wires into the load box through the appropriate strain relief or conduit.
- 5 Connect wires to the main lug L1 and L2 terminators, GND, and NEUTRAL located at the load box chassis assembly (see Figure 3-1).
- 6 Disconnect and remove the cabinet load box main bonding jumper.
Note: The redundant main bonding jumper is not required per NEC with external power pedestal or service disconnect.
- 7 Remove the neutral bonding screw in the cabinet ac load box panel.
- 8 Turn the commercial ac power feed to the ON position.
- 9 Use a voltmeter to verify power measurements listed in Table 3-4.

Table 3-4
AC voltage verification

AC input	If branch circuit	If main service entrance
230 Vac	L1 bar to L2 bar	L1 to L2 on main breaker
115 Vac	L1 bar to N bar	L1 main breaker to neutral bar
115 Vac	L2 bar to N bar	L2 main breaker to neutral bar

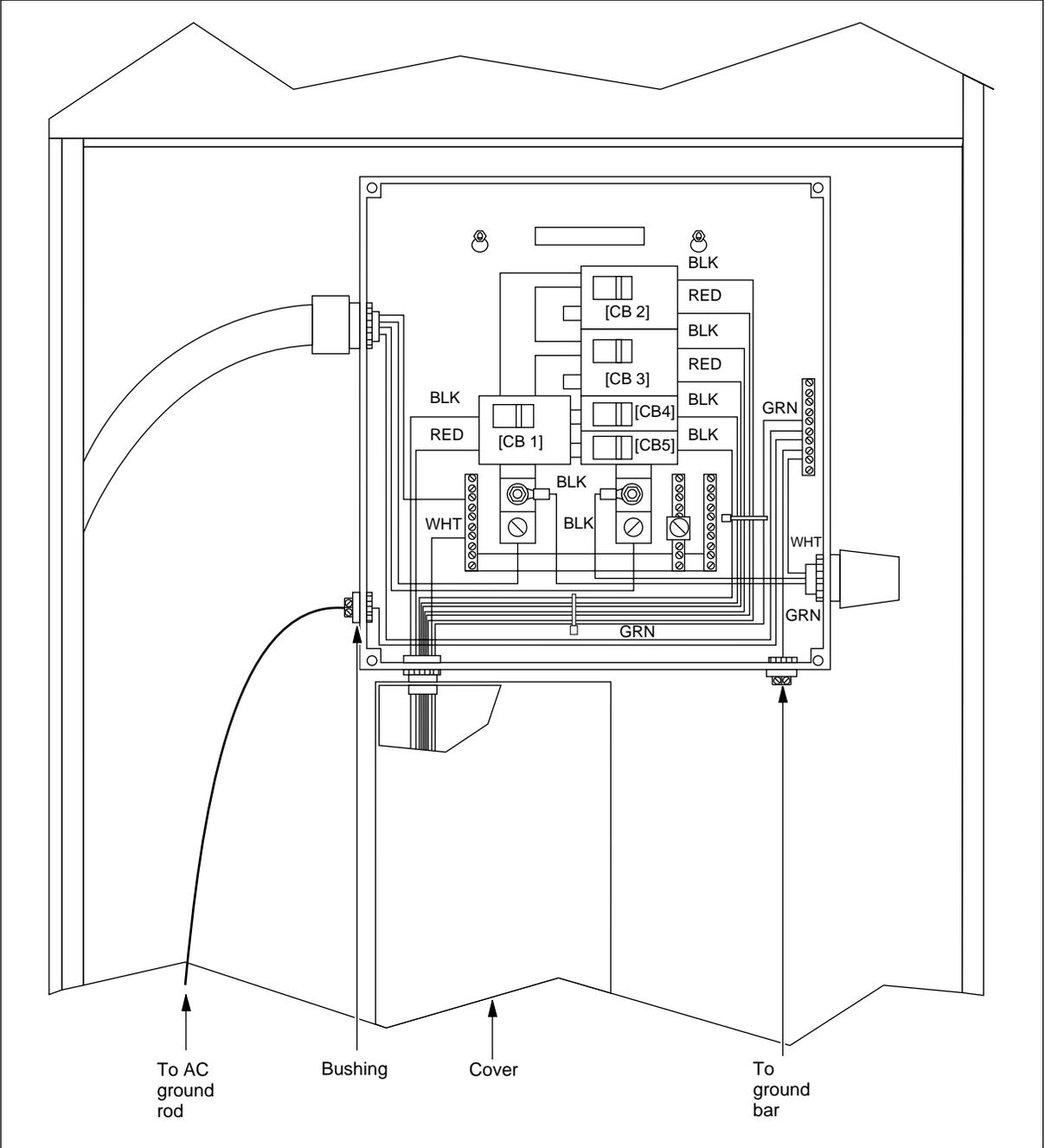
- 10 Reinstall all cover panels and tightly secure.

—continued—

Procedure 3-2 (continued)
Wiring the ac load box as a branch circuit

Figure 3-1
AC load box wired as branch circuit

FW-15119



—end—

Procedure 3-3

Wiring the ac load box as a main service entrance

Use this procedure to wire the ac load box option as a main service entrance. Wire only the option specified by the job requirements.

There are two load box wiring options for the Series 800A cabinet:

- branch circuit
- main service entrance panel

Note: To wire the ac load box as a branch service option, perform Procedure 3-2, “Wiring the ac load box as a branch circuit”.

Tools required

- voltmeter
- one medium flat blade screwdriver
- one small flat blade screwdriver
- one wire stripper for 6 AWG, 10 AWG and 12 AWG wire

Material required

- one 2-inch NPT knockout connector or equivalent

Precautions

The following safety precautions should be observed at all times during the cabinet installation procedures:

- No equipment should be installed until the cabinet is firmly secured to its mounting pad, as described in Chapter 2, “Installing the cabinet”.
- Do not open the front or rear doors unless the cabinet is firmly secured to the mounting pad.
- Observe all NEC and local codes for electrical wiring.



CAUTION 1

Electrical shock hazard

The procedures listed in this chart should be done by a qualified electrician. The procedures outlined are recommended guidelines; be sure to follow all local codes for wiring procedures.

—continued—

Procedure 3-3 (continued)
Wiring the ac load box as a main service entrance

Action

Step Action



CAUTION 2

Fire hazard

Remove all paper and any other combustible materials from inside the cabinet before the cabinet is powered up. Failure to comply with this warning could result in a fire.

- 1 Turn all circuit breakers in the ac load box to the OFF position.
- 2 Route the power and ground cabling from the external mounted ac meter socket through an NEC approved conduit into the 2-inch conduit opening in the bottom of the ac compartment.
Note: Reference local codes and NEC guidelines for line side service installation requirements.
- 3 Punch out an appropriate sized knockout on the left side of the load box for strain relief or conduit installation.
- 4 Route wires into the load box through the appropriate stain relief or conduit.
- 5 Connect wires to the 60 A main circuit breaker located at the top left position on the load box chassis (see Figure 3-2).
Note: The minimum wire size recommended is 6 AWG type XHHW or equivalent.
- 6 Remove the neutral bonding screw in the cabinet ac load box panel.
- 7 Turn the commercial ac power feed to the ON position.
- 8 Use a voltmeter to verify power measurements listed in Table 3-5.

Table 3-5
AC voltage verification

AC input	For branch circuits	For main service entrances
230 Vac	L1 bar to L2 bar	L1 to L2 on main breaker
115 Vac	L1 bar to N bar	L1 main breaker to neutral bar
115 Vac	L2 bar to N bar	L2 main breaker to neutral bar

- 9 Reinstall all cover panels and secure tightly.

—continued—

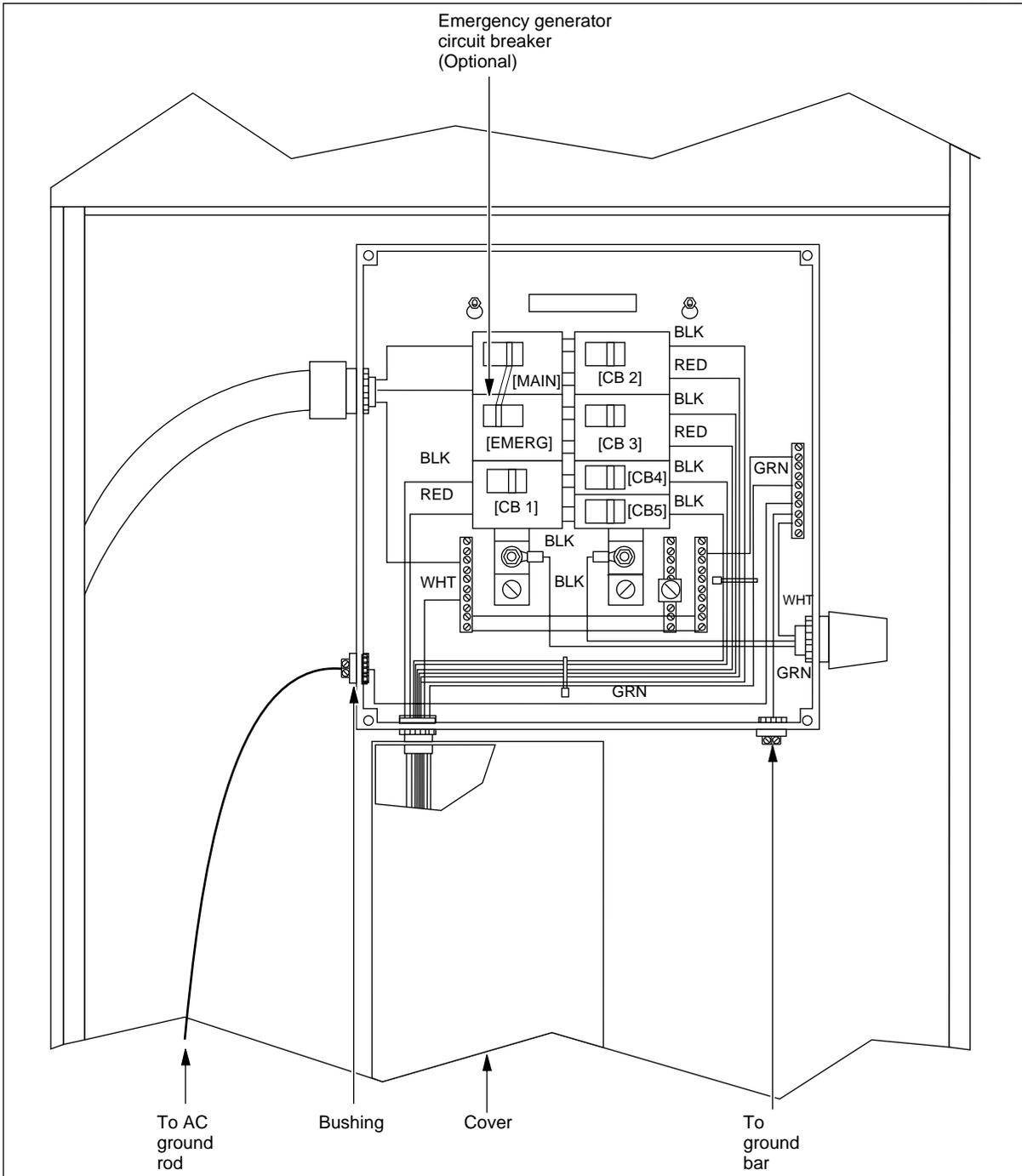
3-12 Connecting commercial power

Procedure 3-3 (continued)

Wiring the ac load box as a main service entrance

Figure 3-2
AC load box wired as main service panel

FW-15120



—end—

Procedure 3-4

Connecting earth ground to the ac power pedestal

Use this procedure to connect the earth ground to the ac power pedestal option.

The cabinet earth ground rod is normally buried in the ground adjacent to the cabinet. Observe local electrical codes for buried grounding techniques and their requirements.

Tools required

- voltmeter
- one medium flat blade screwdriver
- one small flat blade screwdriver
- one wire stripper for 6 AWG, 10 AWG and 12 AWG wire

Material required

- one 2-inch NPT knockout connector or equivalent

Precautions

The following safety precautions should be observed at all times during the cabinet installation procedures:

- Do not open the front or rear doors unless the cabinet is firmly secured to the mounting pad as described in Chapter 2, “Installing the cabinet”.
- Observe all NEC and local codes for electrical wiring.



CAUTION 1

Electrical shock hazard

The procedures listed in this chart should be done by a qualified electrician. The procedures outlined are recommended guidelines; be sure to follow all local codes for wiring procedures.



CAUTION 2

Fire hazard

Remove all paper and any other combustible materials from inside the cabinet before the cabinet is powered up. Failure to comply with this warning could result in a fire.

—continued—

3-14 Connecting commercial power

Procedure 3-4 (continued)

Connecting earth ground to the ac power pedestal

Action

- | Step | Action |
|------|--|
| 1 | Turn all circuit breakers in the ac load box to the OFF position. |
| 2 | Unbolt and set aside the following panels in the ac power pedestal: <ul style="list-style-type: none">• upper left side cover panel• upper right side cover panel• primary distribution load box cover panel |

AC grounding electrode installation
(typical for a main service entrance panel):



CAUTION 1

AC grounding electrode installation

For a main service panel entrance, an ac grounding electrode system requires bonding to an ac main service power neutral/ground bus. Consult the local power company or telco for code restrictions or NEC variations.

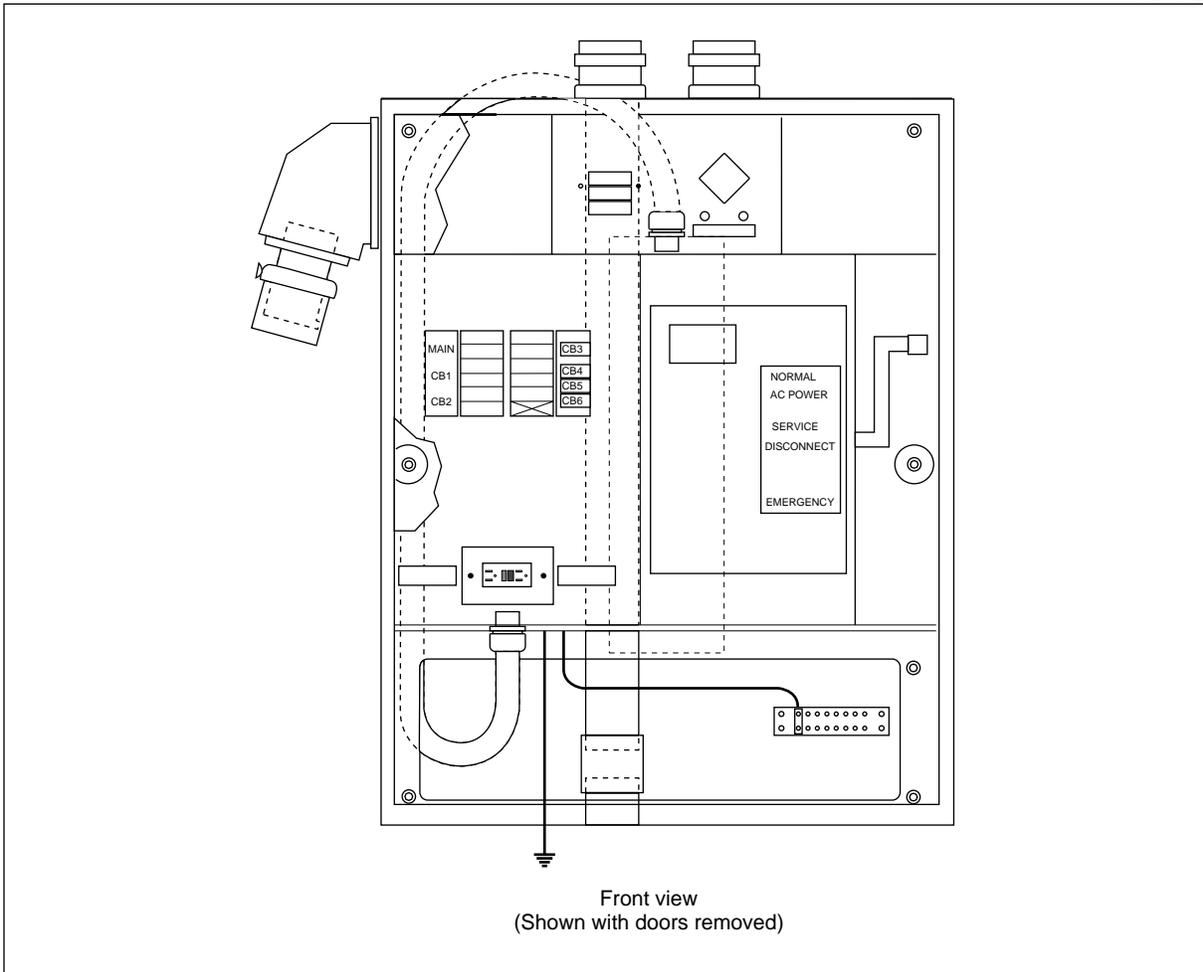
- 3 Ensure that the ac ground rod or ring (electrode) has been installed per local, telco, and NEC code requirements.
- 4 Measure the ground-to-earth resistance.
Note: The ground-to-earth resistance must be less than or equal to 25 Ω .
- 5 Attach a 6 AWG tinned copper wire to the exterior cabinet ground rod.
- 6 Route the wire into the cabinet through the 1.25-inch conduit entrance located in the ac power pedestal.
- 7 Route the 6 AWG wire through knockout bushing into the load center.
- 8 Attach the grounding electrode to the available grounding bus bar position in the load box (per NEC 250-23/81/84/91/92).
- 9 Remove the top-mounted hub locking collar (see Figure 3-3).
- 10 Attach the ac meter socket panel (customer provided) to the power pedestal hub on top of the power pedestal.
- 11 Punch out both the left and right 2.5-inch knockouts located on the bottom of the meter socket panel.
- 12 Align the meter socket against the rear pedestal mounting plate over the hub.

—continued—

Procedure 3-4 (continued)
Connecting earth ground to the ac power pedestal

Figure 3-3
Attached ac power pedestal option

FW-15121



—continued—

3-16 Connecting commercial power

Procedure 3-4 (continued)

Connecting earth ground to the ac power pedestal

- | Step | Action |
|------|--|
| 13 | Mark the area for the second hub location on the ac pedestal. |
| 14 | Drill and punch a hole sized for the available hub. |
| 15 | Install the second hub (customer provided) into position and tighten the bottom locking collar inside the ac pedestal. |
| 16 | Install the meter socket over both hubs and tighten the locking collar for each hub. |



CAUTION 2

Meter socket installation

Do not use sheet metal screws that are over 3/4-inch in length.

Do not drill or tighten screws into the main cabinet panel that is located right behind the pedestal meter mounting panel.

- | | |
|----|--|
| 17 | Attach the meter socket panel to the rear pedestal meter mounting panel using 3/4-inch sheet metal screws. |
| 18 | Ground all hub connectors to the meter socket and housing with a minimum 6 AWG wire per NEC. |

—end—

Procedure 3-5

Wiring the ac power pedestal

Use this procedure to wire the ac power pedestal option.

Wire the ac power pedestal for S800A cabinet installed with the power pedestal option.

Tools required

- voltmeter
- one medium flat blade screwdriver
- one small flat blade screwdriver
- one wire stripper for 6 AWG, 10 AWG and 12 AWG wire

Material required

- one 2-inch NPT knockout connector or equivalent

Precautions

The following safety precautions should be observed at all times during the cabinet installation procedures:

- Do not open the front or rear doors unless the cabinet is firmly secured to the mounting pad as described in Chapter 2, “Installing the cabinet”.
- Observe all NEC and local codes for electrical wiring.



CAUTION 1 **Electrical shock hazard**

The procedures listed in this chart should be done by a qualified electrician. The procedures outlined are recommended guidelines; be sure to follow all local codes for wiring procedures.



CAUTION 2 **Fire hazard**

Remove all paper and any other combustible materials from inside the cabinet before the cabinet is powered up.

Failure to comply with this warning could result in a fire.

—continued—

3-18 Connecting commercial power

Procedure 3-5 (continued)

Wiring the ac power pedestal

Action

-
- | Step | Action |
|------|--|
| 1 | Route the power cabling from the top-mounted meter socket through the right hub and into the cable wire way. |
| 2 | Route the line ac lead through the knockout bushing into the transfer knife switch and terminate at the line lugs. |
| 3 | Route the neutral lead from the top-mounted meter socket through the right hub and into the cable wire way. |
| 4 | Continue through the left side knockout bushing into the distribution load center and terminate at the neutral bus bar. |
| 5 | Route the ground lead from the meter socket panel through the right hub into the cable wire way. |
| 6 | Continue through the left side knockout bushing into the distribution load center and terminate at ground bus bar.
Note: Consult NEC and local codes for appropriate cable size. |
| 7 | Pull the outside line power cable through the left hub into the meter socket panel and terminate per NEC and local codes. |
| 8 | Check that the neutral bonding screw in the cabinet ac load box panel is tightly secured to the neutral ground bar. |
| 9 | Turn the commercial ac power feed to the ON position. |
| 10 | Use a voltmeter to verify power measurements listed in Table 3-6. |

Table 3-6
AC voltage verification

AC input	For branch circuits	For main service entrances
230 Vac	L1 bar to L2 bar	L1 to L2 on main breaker
115 Vac	L1 bar to N bar	L1 main breaker to neutral bar
115 Vac	L2 bar to N bar	L2 main breaker to neutral bar

- 11 Reinstall all cover panels and secure tightly.

—end—

Installing the OSP cables

This chapter provides information on the routing and installation of the external cabling into the S800A cabinet. Voice frequency (VF), miscellaneous, T1, fiber and maintenance cabling enters the cabinet through the termination compartment.

How to use this chapter

In the following table, you will find a list of the procedures to install the external outside plant cabling for the AccessNode S800A Outside Plant (OSP) cabinet. Perform the procedures in the order listed. If you cannot successfully complete these procedures, contact your next level of support.

Chapter task list

Task	See
Pulling the OSP cabling into the cabinet	Procedure 4-1 on page 4-4
Butting and stripping the VF, miscellaneous, T1 and maintenance cables	Procedure 4-2 on page 4-8
Butting and stripping the fiber cable	Procedure 4-3 on page 4-12
Installing the cable bonding clamps	Procedure 4-4 on page 4-16
Applying a moisture barrier to the air-core cable	Procedure 4-5 on page 4-20

Prerequisites for installation

The prerequisites for bonding and grounding the OSP cabling include:

- The cabinet has been mounted on the selected concrete pad as defined in Chapters 1, 2 and 3 of this practice.
- All hardware and materials are available and have been checked for completeness and readiness for the installation.
- All the required drawings, local installation instructions, job specifications, and other documentation are available and ready for use.
 - encapsulating material as per Bell System Practices Section 631-600-305 Issue 1, November 1972 or the procedure enclosed in the 8962 Multi-mold package
 - electrical tape
 - cable insulating gel removal material; D-gel or equivalent de-greaser
 - 1/2-inch trade size split flex tubing or equivalent
 - fiber optic protective buffer tubing or equivalent

Precautions

The following safety precautions should be observed at all times during the OSP cable bonding and grounding procedures:

- No equipment should be installed until the cabinet is firmly secured to its mounting pad, as described in Chapter 2, “Installing the cabinet”.
- Do not open the front or rear doors unless the cabinet is firmly secured to the mounting pad.
- Observe all National Electrical Code (NEC) and local codes for electrical wiring.



CAUTION

Electrical shock hazard

The procedures listed in this chart should be done by a qualified electrician. The procedures in this chapter are recommended guidelines; be sure to follow all local codes for wiring procedures.

Cable entry

The S800A cabinet is constructed with cable conduit entry ports located in the bottom of the end compartments of the cabinet (see Figure 4-1 on page 4-7).

Note: All trade sizes listed are based on Schedule 40 permanent virtual circuit (PVC).

In the termination compartment there are four 4.50-inch inside diameter (ID) openings for 4.00-inch trade size conduit and one 2.00-inch ID opening for 1.50-inch trade size conduit.

Table 4-1 shows the conduit openings in the termination compartment.

Table 4-1
Termination compartment conduit openings

Opening size	Conduit trade size	Function
4.50 inches (11.43 cm)	4.00 inches (10.16 cm)	VF - pairs 1–600 cable entrance
4.50 inches (11.43 cm)	4.00 inches (10.16 cm)	VF - pairs 601–1200 cable entrance
4.50 inches (11.43 cm)	4.00 inches (10.16 cm)	VF - miscellaneous cable entrance
4.50 inches (11.43 cm)	4.00 inches (10.16 cm)	VF - HF or fiber cable entrance
2.00 inches (5.08 cm)	1.50 inches (3.81 cm)	Earth ground rod connection entrance

Procedure 4-1 Pulling the OSP cabling into the cabinet

This procedure explains:

- what termination compartment conduit opening to use for each OSP cable
- how to pull the 600 pair VF, miscellaneous, T1, and fiber cables into the Series 800A cabinet

Table 4-2 below and Figure 4-1 on page 4-7 show where to pull the OSP cable into the cabinet and how much slack to pull for cable routing.

Table 4-2
OSP cable entry locations and lengths

When you pull cable for	Into the termination compartment conduit opening at this location	Then leave this number of feet of cable for routing
VF cable pairs 1–600	far left	10 ft (3.1 m)
VF cable pairs 601–1200	middle left	12 ft (3.7 m)
VF or miscellaneous pairs	middle right	25 ft (7.6 m)
T1 distribution or maintenance pairs	middle right	5 ft (1.5 m)
Fiber	far right	25 ft (7.6 m)

Precautions

The following safety precautions should be observed at all times during the cable sheath bonding and grounding procedures:

- No equipment should be installed until the cabinet is firmly secured to its mounting pad, as described in Chapter 2, “Installing the cabinet”.
- Do not open the front or rear doors unless the cabinet is firmly secured to the mounting pad.

Tools required

There are no special tools required to perform this procedure.

Materials required

There are no special materials required to perform this procedure.

—continued—

Procedure 4-1 (continued)

Pulling the OSP cabling into the cabinet

Action

Step	Action
1	Pull the VF cable for pairs 601–1200 into the cabinet through the VF (601–1200) cable entrance conduit opening located in the middle left-hand side of the termination compartment (see Table 4-3 on page 4-6 and Figure 4-1 on page 4-7).
2	Secure the cable in an out-of-the-way position.
3	Pull the VF cable for pairs 1–600 into the cabinet through the VF (1–600) cable entrance conduit opening located in the far left-hand side of the termination compartment.
4	Secure the cable in an out-of-the-way position.
5	Pull the miscellaneous pair cable into the cabinet through the VF (Misc.) cable entrance conduit opening located on the middle right-hand side of the termination compartment.
6	Secure the cable in an out-of-the-way position.
7	Pull the T1 distribution pair cable into the cabinet through the HF-HF or fiber cable entrance conduit opening located on the far right-hand side of the termination compartment.
8	Secure the cable in an out-of-the-way position.

—continued—

4-6 Installing the OSP cables

Procedure 4-1 (continued)

Pulling the OSP cabling into the cabinet

Step	Action
9	Perform the steps shown in Table 4-3 for the fiber entrance arrangement dictated by the job specifications.

**Table 4-3
Pulling the OSP fiber into the cabinet**

If the job specifications require that the OSP fiber cable is to be	Then perform these steps
Spliced, grounded and bonded in a location external to the S800A cabinet	<ul style="list-style-type: none"> • Protect the entire length of the fiber patch cords with split flex tubing, or by using standard local practices prior to pulling them into the cabinet. • Pull the protected fiber patch cords from the external source into the cabinet through the conduit opening located on the far right-hand side of the termination compartment (see Figure 4-1 on page 4-7). • Tie wrap the protective tubing, with the patch cords inside, to the rungs of the cable ladder on the right hand side of the termination compartment. • Go to step 10.
Spliced, grounded and bonded at a fiber management system internal to the S800A cabinet	<ul style="list-style-type: none"> • Pull the OSP fiber cable into the cabinet through the conduit opening located on the far right-hand side of the termination compartment (see Figure 4-1 on page 4-7). Note: Splicing, bonding and grounding will be done at the fiber management system (see Chapter 7, "Routing and splicing the fiber cable"). • Go to step 10.
Spliced at the fiber management system and bonded and grounded at the termination compartment in the S800A cabinet	<ul style="list-style-type: none"> • Pull the OSP fiber cable into the cabinet through the conduit opening located on the far right-hand side of the termination compartment (see Figure 4-1 on page 4-7). Note: Bonding and grounding procedures are in Procedure 4-3 and Procedure 4-4 of this practice. Splicing will be done at the fiber management system (see Chapter 7, "Routing and splicing the fiber cable"). • Go to step 10.

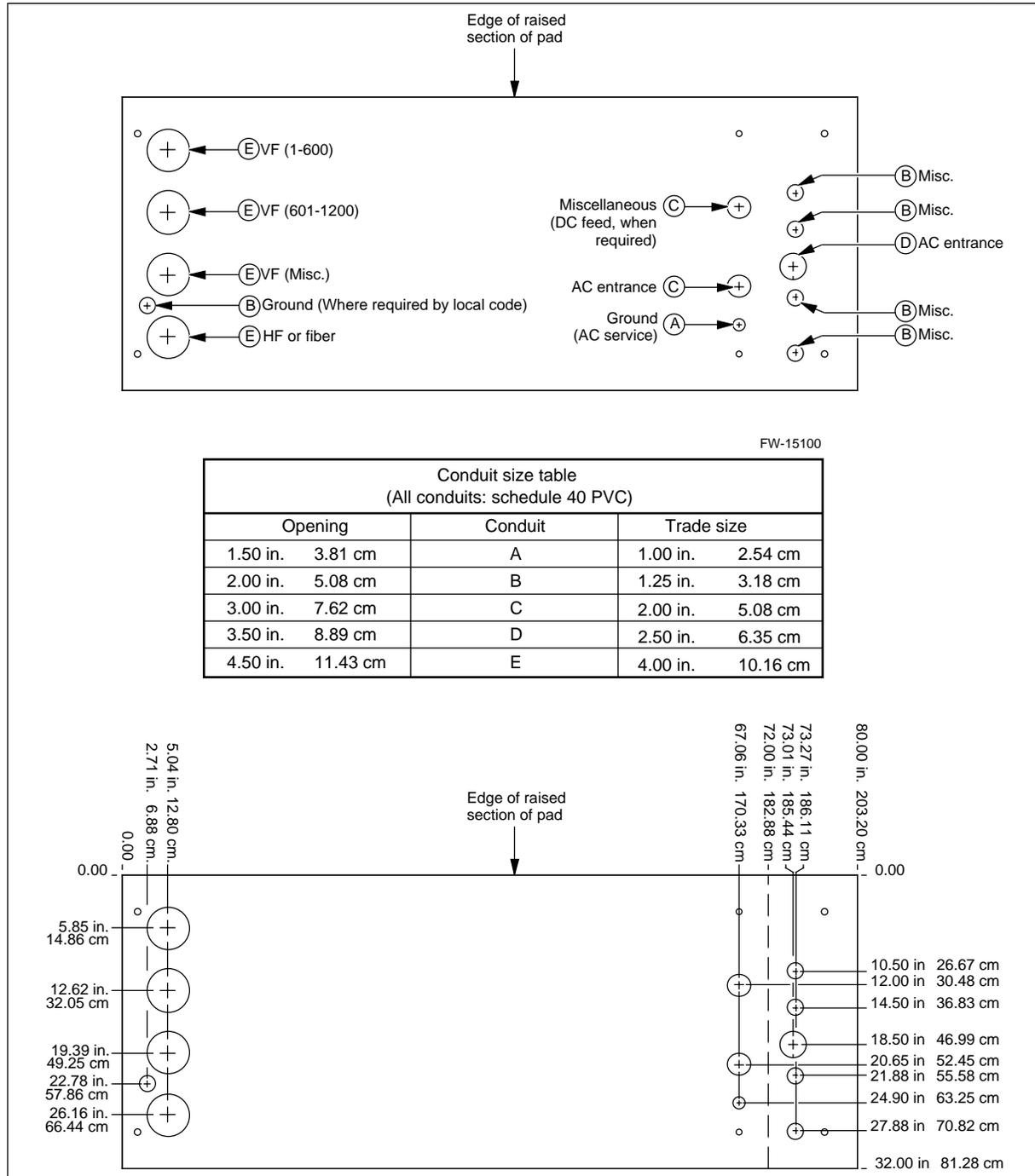
10	Secure the cable in an out-of-the-way position.
-----------	---

—continued—

Procedure 4-1 (continued)
Pulling the OSP cabling into the cabinet

Figure 4-1
Conduit openings in the S800A cabinet

FW-15100



—end—

Procedure 4-2

Butting and stripping the VF, miscellaneous, T1 and maintenance cables

This procedure explains how to butt and strip the 600 pair VF, miscellaneous, T1 and maintenance cables for installation into the Series 800A cabinet.

Precautions

The following safety precautions should be observed at all times during the OSP cable installation procedures:

- No equipment should be installed until the cabinet is firmly secured to its mounting pad, as described in Chapter 2, “Installing the cabinet”.
- Do not open the front or rear doors unless the cabinet is firmly secured to the mounting pad.
- Observe all NEC and local codes for electrical wiring.



CAUTION 1 **Local wiring codes**

The procedures in this chapter are recommended guidelines; be sure to follow all local codes for wiring procedures.

Prerequisites

Ensure that Procedure 4-1 on page 4-4, “Pulling the OSP cabling into the cabinet” has been completed before beginning the cable butting and stripping.

Tools required

- cable knife or cable sheath cutter
- standard cable butting, stripping and fanning tools

Material required

- cable insulating gel removal material; D-gel or equivalent de-greaser
- electrical tape

—continued—

Procedure 4-2 (continued)

Butting and stripping the VF, miscellaneous, T1 and maintenance cables

Action

Step	Action
1	Measure 8 inches (20.32 cm) up from the base of the cable conduit holes on each of the cables pulled into the cabinet in Procedure 4-1 and mark that point (see Figure 4-2 on page 4-10).



CAUTION 2

Wire damage

Be careful not to cut through any of the pairs.

2	Cut 360 degrees around the sheath on the first cable at the 8-inch (20.32 cm) measurement.
3	Split the sheath of the cable down the center from the 8-inch (20.32 cm) mark to the end of the cable.
4	Spread and pull the sheath off of the cable from the 8-inch (20.32 cm) mark to the end of the cable to expose the grounding shield.
5	Cut the grounding shield 360 degrees around the cable.



CAUTION 3

Wire insulation damage

Check the cable carefully and verify that none of the pairs have been accidentally nicked, stripped, or cut.

6	Spread and pull the grounding shield off of the cable to expose the plastic wrap.
7	Cut the plastic wrap 1/2-inch (1.27 cm) up from the sheath 8.5 inches (21.6 cm) from cabinet bottom and then 360 degrees around the cable.
8	Spread and pull the plastic wrap off of the cable to expose the cable pairs.
9	Tie wrap the end of each binder group to prevent split pairs.

—continued—

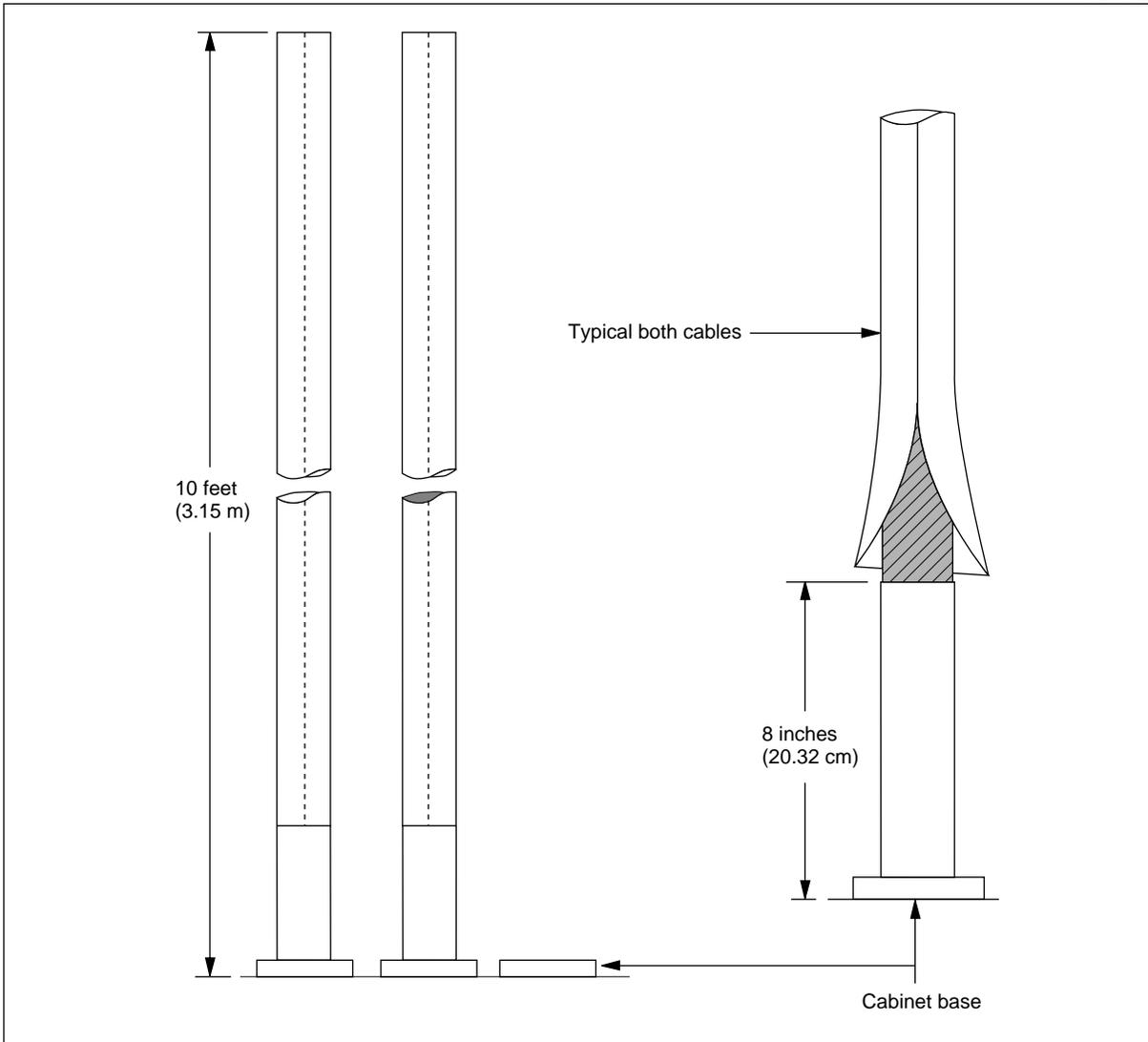
4-10 Installing the OSP cables

Procedure 4-2 (continued)

Butting and stripping the VF, miscellaneous, T1 and maintenance cables

Figure 4-2
Sheath height and cable length

FW-15122



—continued—

Procedure 4-2 (continued)

Butting and stripping the VF, miscellaneous, T1 and maintenance cables

Step	Action
10	Remove all insulating gel throughout both of the cables with rags and De-gel. Note: If using filled cable, remove as much of the gel as you can from the 600 pair cables. A cable that is completely degreased is easier to work with.
11	Cut two inches down at the 8-inch (20.32 cm) mark on the cable towards the cable conduit parallel to the point where the grounding shield is folded.
12	Cut one inch to the left, across (perpendicular to) the cable. This creates the bonding clamp mounting location on the cable. Note: Later, a bond clamp is attached to this door or flap in order to ground both of the cables.
13	Repeat this procedure for each OSP cable (except the fiber cable) pulled into the cabinet in Procedure 4-1 on page 4-4.

—end—

Procedure 4-3

Butting and stripping the fiber cable

This procedure explains how to butt and strip the OSP fiber cable in the termination compartment when the fiber is to be bonded and grounded in the termination compartment.

Table 4-4 shows where to find additional information regarding fiber installation for:

- fiber cables that are spliced, grounded and bonded in locations external to the S800A cabinet such as a customer-owned manhole
- fiber cables that are to be spliced inside the S800A cabinet at the fiber management system such as the ADC fiber patch panel

Table 4-4
Additional fiber management information

If the OSP fiber cable is	Then reference
Spliced, grounded and bonded external to the S800A cabinet (see <i>Note 1</i>)	Local fiber management practices.
To be spliced internal to the S800A cabinet at a fiber management system (see <i>Note 2</i>)	Chapter 7, "Routing and splicing the fiber cable".

Note 1: For installations where the OSP fiber cable is spliced, bonded and grounded in a location that is external to the cabinet, fiber pigtails or patch cords will be entering the S800A cabinet rather than an OSP fiber. These fibers will have been protected by split flex tubing (or equivalent) at the time of pulling the fibers into the cabinet (see Procedure 4-1 on page 4-4, "Pulling the OSP cabling into the cabinet").

Note 2: For installations where the OSP fiber cable is to be spliced at the fiber management system mounted inside the cabinet, the fiber cable will be butted and stripped during the fiber routing and splicing procedures detailed in Chapter 7, "Routing and splicing the fiber cable".

—continued—

Procedure 4-3 (continued)

Butting and stripping the fiber cable

Precautions

The following safety precautions should be observed at all times during the OSP cable installation procedures:

- No equipment should be installed until the cabinet is firmly secured to its mounting pad, as described in Chapter 2, “Installing the cabinet”.
- Do not open the front or rear doors unless the cabinet is firmly secured to the mounting pad.
- Observe all NEC and local codes for electrical wiring.



CAUTION 1

Local wiring codes

The procedures outlined are recommended guidelines; be sure to follow all local codes for wiring procedures.

- Wear safety glasses at all times when installing optical fibers.
- Use tweezers or the sticky side of a piece of vinyl tape to handle loose fiber ends.
- Handle optical fibers carefully and always position them securely when splicing.
- Be careful during installation to avoid contact with glass chips.
- Always use tissue paper to wipe small pieces of glass fiber from the hands before touching the eye area.
- Protect single fiber optical connectors with dust caps at all times.
- Place any discarded fiber cuttings in a plastic bottle specifically used for disposal.

Prerequisites

Ensure that Procedure 4-1 on page 4-4 and Procedure 4-2 on page 4-8 have been completed.

Tools required

- cable knife or cable sheath cutter
- standard cable butting, stripping and fanning tools for fiber cable

Materials required

- 1/2-inch trade size split flex tubing or equivalent
- fiber optic protective buffer tubing or equivalent
- electrical tape

—continued—

4-14 Installing the OSP cables

Procedure 4-3 (continued)

Butting and stripping the fiber cable

Action

Step Action

- 1 Measure 8 inches (20.32 cm) up from the base of the cable conduit holes on the fiber cable pulled into the cabinet in Procedure 4-1 on page 4-4 and mark that point.



CAUTION 2

Fiber damage

Be careful not to cut through any of the fibers.

- 2 Cut 360 degrees around the sheath at the 8-inch (20.32 cm) measurement.
- 3 Split the sheath of the cable down the center from the 8-inch (20.32 cm) mark to the end of the cable.
- 4 Spread and pull the sheath off of the cable from the 8-inch (20.32 cm) mark to the end of the cable to expose the grounding shield.
- 5 Cut the grounding shield 360 degrees around the cable.



CAUTION 3

Fiber insulation damage

Check the cable carefully and verify that none of the fibers had been accidentally nicked, stripped, or cut.

- 6 Spread and pull the grounding shield off of the cable to expose the plastic wrap.
- 7 Cut the plastic wrap 1/2-inch (1.27 cm) up from the sheath 8.5 inches (21.6 cm) from cabinet bottom and then 360 degrees around the cable.

—continued—

Procedure 4-3 (continued)

Butting and stripping the fiber cable

Step	Action
8	Spread and pull the plastic wrap off of the cable to expose the cable pairs.
9	Cut two inches (5.08 cm) down at the 8-inch (20.32 cm) mark on the cable towards the cable conduit parallel to the point where the grounding shield is folded.
10	Cut one inch (2.54 cm) to the left, across (perpendicular to) the cable. Note: This creates the bonding clamp mounting location on the cable. Later, a bond clamp will be attached to this door or flap in order to ground both of the cables.
11	Install protective buffer tubing around the exposed fibers after the fiber cable has been butted and stripped.
12	Install protective split flex tubing around all of the buffer tubes after the fiber cable has been butted and stripped.
13	Secure the split flex tubing, with the protected fibers inside, to the cable ladder on the right-hand side of the termination compartment.

—end—

Procedure 4-4 Installing the cable bonding clamps

This procedure explains how to install the cable bonding clamp and ground the 600 pair VF, miscellaneous, T1, maintenance and fiber cables for installation into the Series 800A cabinet.

Use Figure 4-3 on page 4-18 and Figure 4-4 on page 4-19 for all steps in this procedure.

Precautions

The following safety precautions should be observed at all times during the cable sheath bonding and grounding procedures:

- No equipment should be installed until the cabinet is firmly secured to its mounting pad, as described in Chapter 2, “Installing the cabinet”.
- Do not open the front or rear doors unless the cabinet is firmly secured to the mounting pad.
- Observe all NEC and local codes for electrical wiring.



CAUTION 1

Electrical shock hazard

The procedures listed in this chart should be done by a qualified electrician. The procedures outlined are recommended guidelines; be sure to follow all local codes for wiring procedures.

Prerequisites

Ensure that Procedure 4-1 through Procedure 4-3 have been completed.

Tools required

- one 6-8-inch (15–20 cm) adjustable wrench
- cable knife or cable sheath cutter
- voltmeter
- standard cable butting, stripping and fanning tools

Material required

- cable insulating gel removal material; D-gel or equivalent de-greaser
- electrical tape

—continued—

Procedure 4-4 (continued)
Installing the cable bonding clamps

Action

Step	Action
1	Slide a paper punch between the plastic wrap and the grounding shield at the bonding clamp mounting location on the first cable (see Figure 4-3 on page 4-18).
2	Punch a hole in the center of this area, 1-inch down and 1/2-inch across.
	<div style="border: 1px solid black; padding: 5px;">  <p>CAUTION 2 Grounding shield hole punch alignment Make sure that the hole punched in the grounding shield and the sheath are in line with each other.</p> </div>
3	Punch a hole through the sheath of the flap in the center of this area, 1-inch down, 1/2-inch across.
4	Slip the threaded end of a bond clamp between the plastic wrap and the grounding shield and then up through the punched hole on both cables.
5	On both cables, place the bond clamp cover plate over the threaded stud and then against the cable.
6	On both cables, secure the bond clamp to the cable with one of the threaded nuts.
7	Using electrical tape, tape two inches above and below the bond clamp.
8	Cut a 12-inch (30.48 cm) piece of braided grounding cable for the cable and attach a 1/4-inch ring lug to each end.
9	Attach a braided grounding cable assembly to the bond clamp and secure it with one of the threaded nuts (see Figure 4-4 on page 4-19).
10	Securely tape the bonding clamp and cable sheath at the butt using electrical tape.
11	Secure the other end of the braided grounding cable to the cabinet grounding bar in the termination compartment.
12	Measure the resistance between the grounding shield and the Series 800A cabinet grounding bar. Note: The requirement is 0 ohms resistance.
13	Repeat this procedure for each OSP cable pulled into the cabinet in Procedure 4-1.

—continued—

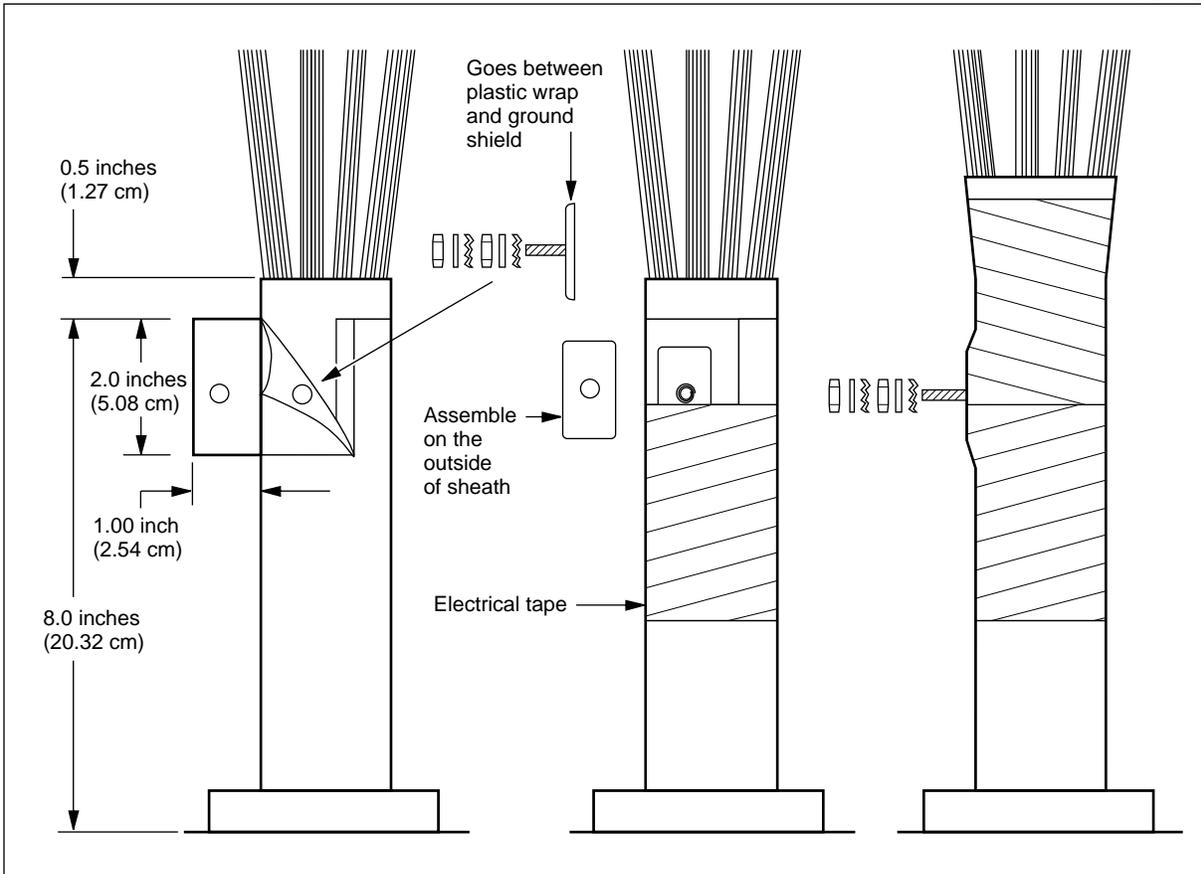
4-18 Installing the OSP cables

Procedure 4-4 (continued)

Installing the cable bonding clamps

Figure 4-3
Installation of bonding clamp

FW-15123

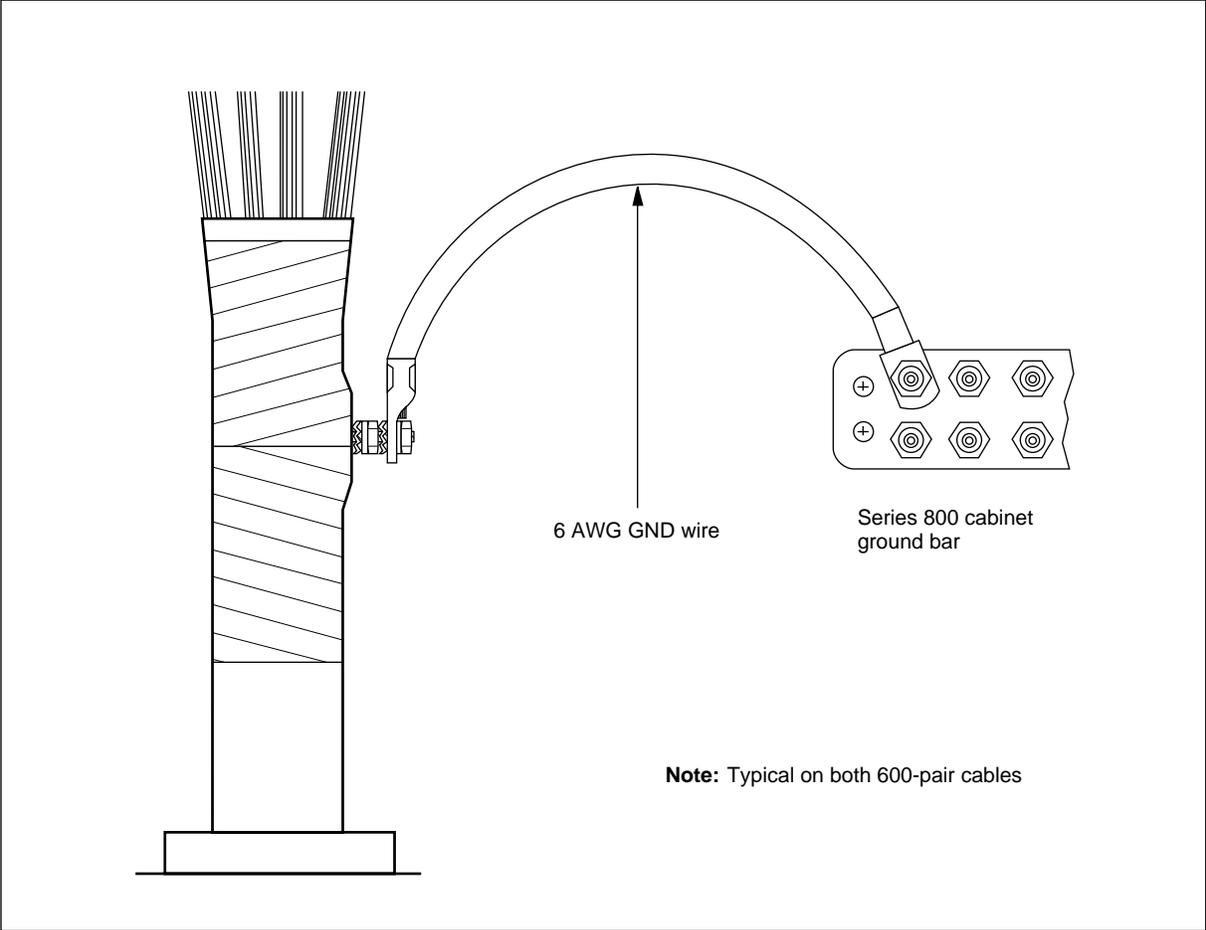


—continued—

Procedure 4-4 (continued)
Installing the cable bonding clamps

Figure 4-4
Attachment of ground wire to grounding bar

FW-15124



—end—

Procedure 4-5

Applying a moisture barrier to the air-core cable

This procedure explains how to apply a moisture barrier to air-core cables pulled into the S800A cabinet.

Note: A moisture barrier is only applied to air-core cable. Disregard this procedure if you are using filled cable.

Precautions

The following safety precautions should be observed at all times during the cable sheath bonding and grounding procedures:

- No equipment should be installed until the cabinet is firmly secured to its mounting pad, as described in Chapter 2, “Installing the cabinet”.
- Do not open the front or rear doors unless the cabinet is firmly secured to the mounting pad.



CAUTION

Safety hazard

Always follow all the recommended safety procedures when performing these steps.

Prerequisites

Ensure that Procedure 4-1 on page 4-4 through Procedure 4-4 on page 4-16 have been completed.

Tools required

There are no special tools required to perform this procedure.

Material required

- encapsulating material as per Bell System Practices (BSP) Section 631-600-305 Issue 1, November 1972 or the procedure enclosed in the 8962 Multi-mold package
- electrical tape

—continued—

Procedure 4-5 (continued)

Applying a moisture barrier to the air-core cable

Action

Step	Action
1	Position the VF cable (pairs 1–600) in the far left conduit opening as upright as possible.
2	Position the VF cable (pairs 601–1200) in the middle-left conduit opening as upright as possible.
3	Position the HF cable in the far right conduit opening as upright as possible.
4	Cut pieces of bonded mesh large enough to wrap around each cable.
5	Make a mold by wrapping each piece of bonded mesh approximately 2 inches (5.08 cm) above the sheath. Note: The top of the bonded mesh to the base of cable conduit should measure 10 inches (25.4 cm).
6	Wrap electrical tape around the base of the bonded mesh on all cables in order to secure it to the cable and form a seal.
7	Mix both parts of the encapsulate in a disposable plastic container no more than ten minutes prior to use.
8	Pour the encapsulate mixture into the mold. Note: Be sure to fill the mold to the top.
9	Wait at least 20 minutes to allow the encapsulate to set.

—end—

Routing and terminating OSP T1 and maintenance pairs

This chapter describes in detail the installation procedures for:

- routing the T1 and maintenance pair cables in the S800A cabinet
- terminating the T1 and maintenance pair cabling

How to use this chapter

In the following table, you will find a list of the procedures to route and terminate the outside plant T1 and maintenance cable pairs for the AccessNode S800A Outside Plant (OSP) cabinet. Perform the procedures in the order listed. If you cannot successfully complete these procedures, contact your next level of support.

Chapter task list

Task	See
Routing and terminating OSP T1 and maintenance pairs	Procedure 5-1 on page 5-3

Prerequisites for installation

The choice of site and compliance with local regulations (such as the applicable electrical codes, right-of-way easements, and noise requirements) are the responsibility of the operating company.

The prerequisites for routing and terminating the T1 and maintenance cabling include:

- The cabinet has been installed on the selected concrete pad as defined in Chapters 1, 2, 3 and 4 of this practice.
- All the required drawings, local installation instructions, job specifications, and other documentation are available and ready for use.
- All hardware and materials are available and have been checked for completeness and readiness for the installation.
 - outside plant cable hole and conduit plugging compound

Precautions

The following safety precautions should be observed at all times during the OSP cable routing and terminating procedures:

- No equipment should be installed until the cabinet is firmly secured to its mounting pad, as described in Chapter 2, “Installing the cabinet”.
- Do not open the front or rear doors unless the cabinet is firmly secured to the mounting pad.
- Observe all National Electrical Code (NEC) and local codes for electrical wiring.



CAUTION

Local wiring codes

The procedures in this chapter are recommended guidelines; be sure to follow all local codes for wiring procedures.

Cable entry

The S800A cabinet is constructed with cable conduit entry ports located at the bottom of the end compartments of the cabinet.

Termination compartment

Table 5-1 shows where the outside plant (OSP) cabling has been pulled into the termination compartment (see Chapter 4, “Installing the OSP cables”) and how much slack has been pulled for cable routing.

Table 5-1
OSP cable entry locations and lengths

When you pull cable for	Into the termination compartment conduit opening at this location	Then leave this number of feet of cable for routing
VF cable pairs 1–600	far left	10 ft (3.1 m)
VF cable pairs 601–1200	middle left	12 ft (3.7 m)
VF or miscellaneous pairs	middle right	25 ft (7.6 m)
T1 distribution or maintenance pairs	middle right	5 ft (1.5 m)
Fiber	far right	25 ft (7.6 m)

Procedure 5-1

Routing and terminating OSP T1 and maintenance pairs

This procedure explains how to route and terminate the T1 and maintenance pairs. See Chapter 13, “Cabinet and equipment wiring and cabling” for reference information for the service protection center (SPC) signal pair assignments and specific connector pin designations.

A customer supplied fuse link should be spliced into the T1 and maintenance pairs outside the cabinet.

Ensure that a QCM2A or equivalent bond clamp(s) is installed on the outside cable (see Chapter 4, “Installing the OSP cables”).

Material required

A customer supplied outside plant cable hole and conduit plugging compound are required materials.

—continued—

5-4 Routing and terminating OSP T1 and maintenance pairs

Procedure 5-1 (continued)

Routing and terminating OSP T1 and maintenance pairs

Action

Step	Action
1	Route the OSP T1 cable(s) on top of the derived T1 cable coming from the AccessNode equipment.
2	Perform the steps shown in Table 5-2 for the type of connectors you are working with to terminate the T1 cables to the connectorized cables exiting from the Service Protection Center (SPC). Note: These connectors terminate on either 3M-MS ² , AT&T 710, or BIX connectors.

Table 5-2
Terminating connectors

If you are terminating	Then perform these steps
BIX connectors with or without cross connect	<ul style="list-style-type: none">• Terminate OSP cable(s) to the SPC T1 cable(s).• Route the cable under the last SPC module.• Form completed cable connections to the lowest swing frame ladder positions assigned for DS1/T1 terminations as shown in Figure 5-1 and Figure 5-2.• Go to step 3.
710 or 3M connectors with no cross connect	<ul style="list-style-type: none">• Terminate the OSP T1 cable(s) to the SPC T1 cable(s).• Form and tie wrap the terminated connectors neatly to the right side cable ladder on the back wall of the termination compartment (see Figure 5-2).• Go to step 3.
710 or 3M connectors with cross connect	<ul style="list-style-type: none">• Terminate the OSP T1 cable(s) to the SPC T1 cable(s).• Form and tie wrap the terminated connectors neatly to the inside right wall cable ladder (see Figure 5-3).• Go to step 3.

- 3 Plug the T1 cable entry hole with epoxy or equivalent compound.
- 4 Close the termination compartment door.

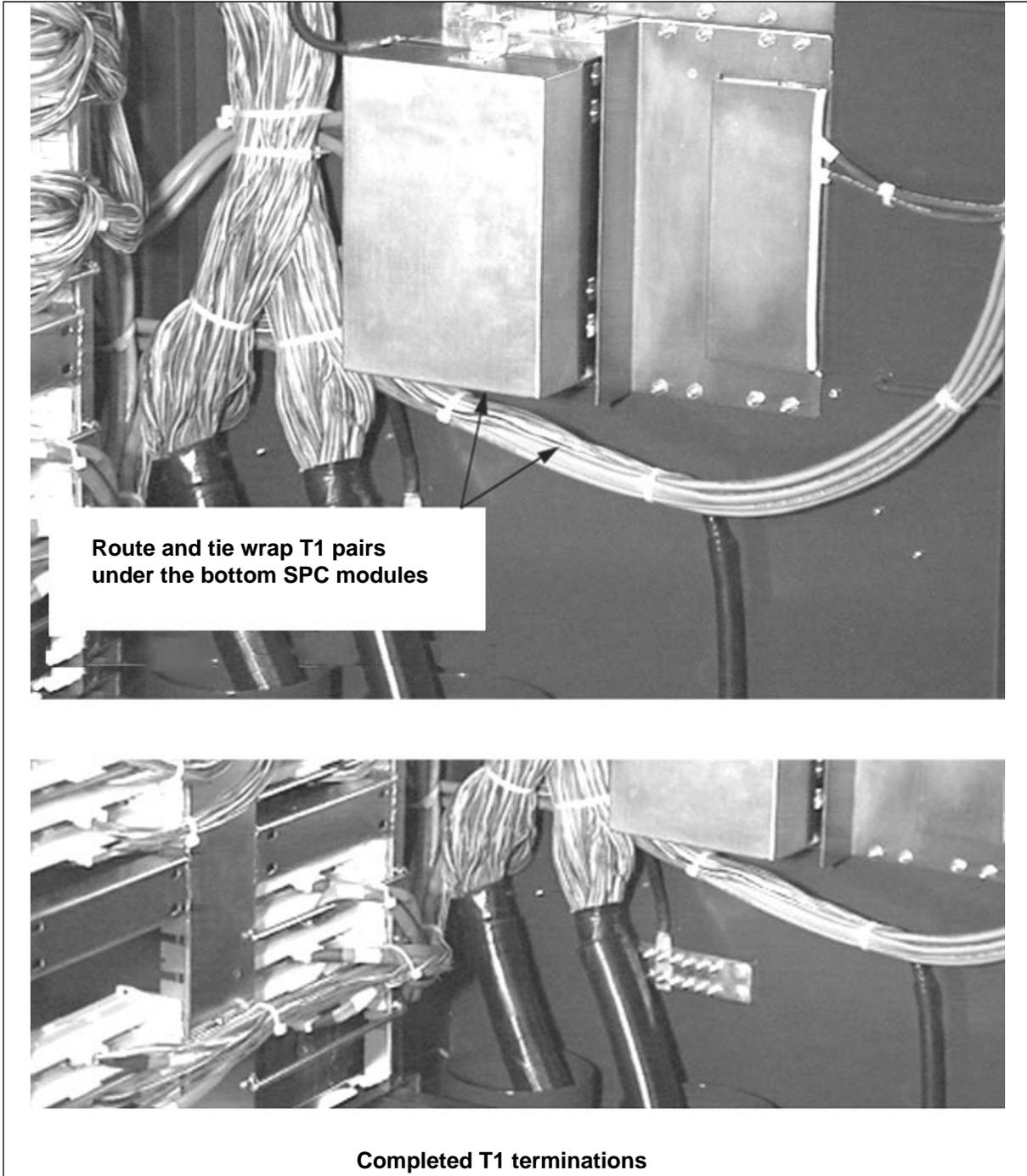
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Procedure 5-1 (continued)

Routing and terminating OSP T1 and maintenance pairs

Figure 5-1

Terminate T1 pairs to BIX connectors (with or without the cross connect)



—continued—

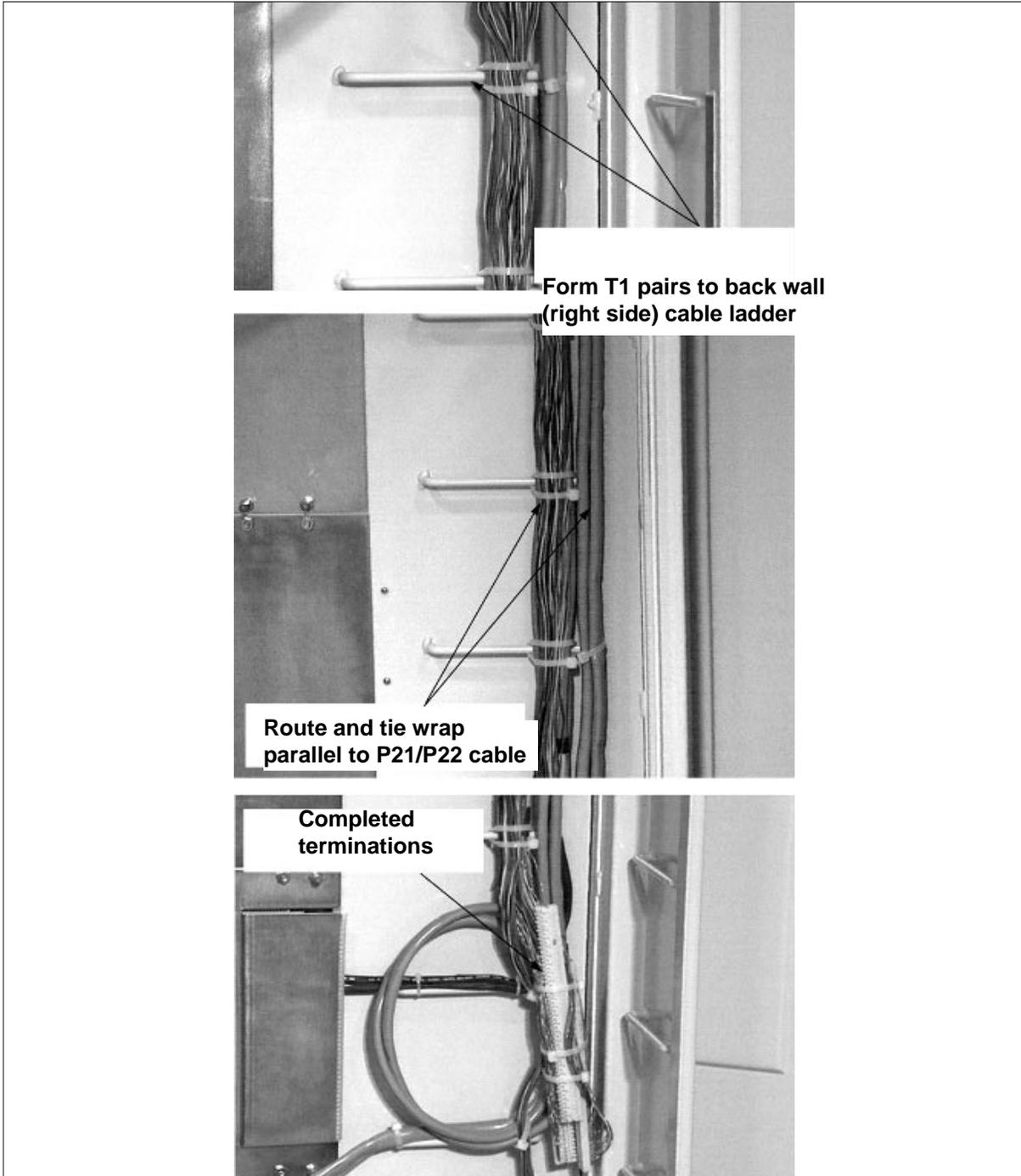
5-6 Routing and terminating OSP T1 and maintenance pairs

Procedure 5-1 (continued)

Routing and terminating OSP T1 and maintenance pairs

Figure 5-2

Terminate T1 pairs to 710 or 3M connectors (without the cross connect)



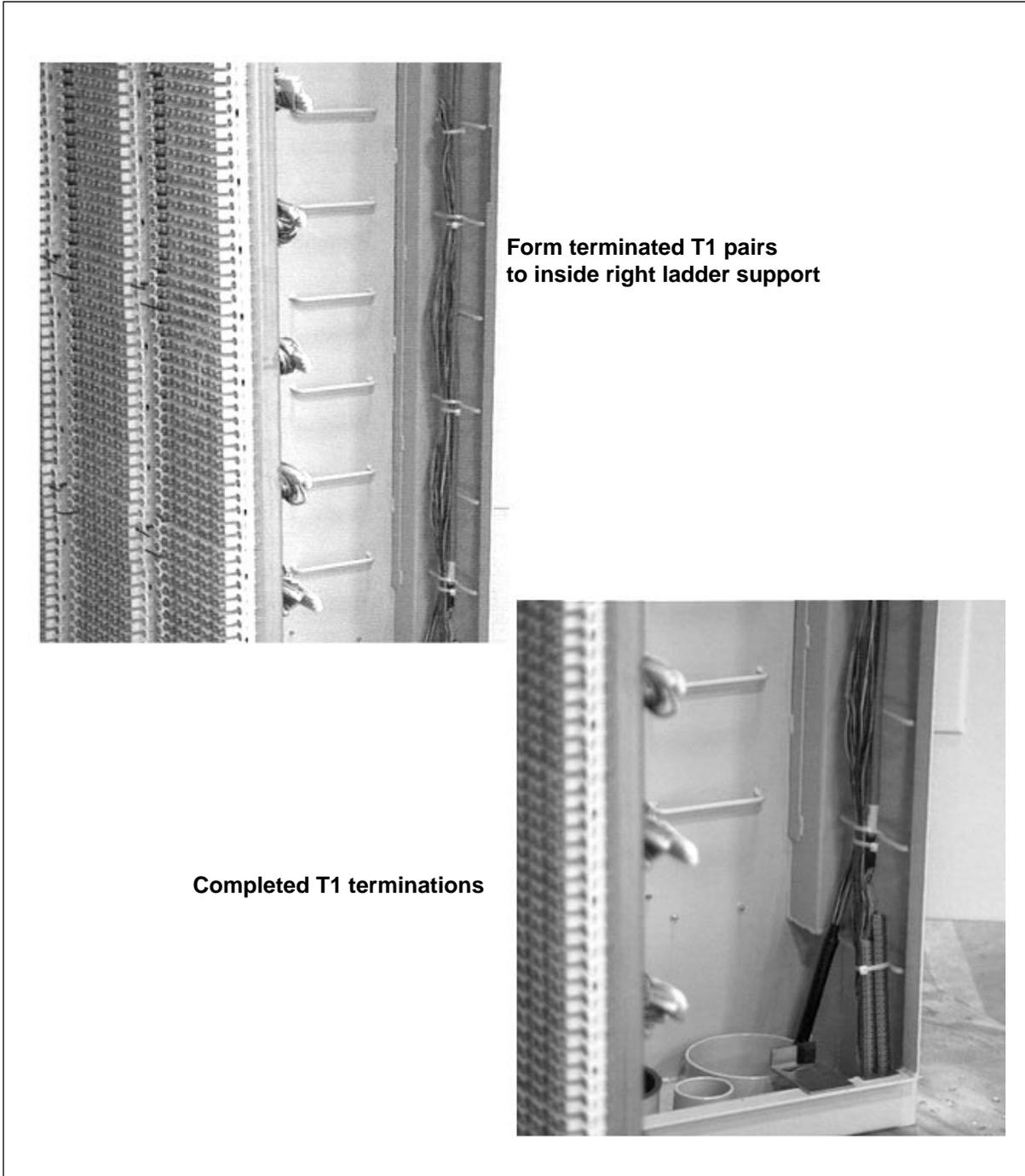
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Procedure 5-1 (continued)

Routing and terminating OSP T1 and maintenance pairs

Figure 5-3

Terminate T1 pairs to 710 or 3M connectors (with cross connect)



—end—

Routing and terminating the VF cables

This chapter details voice frequency (VF) cable routing and termination installation procedures for S800A cabinets equipped with BIX, 710 or MS² connectors, with or without cross-connect.

How to use this chapter

In the following table, you will find a list of the procedures to route and terminate the outside plant T1 and maintenance cable pairs for the S/DMS AccessNode S800A Outside Plant (OSP) cabinet. Perform the procedures in the order listed. If you cannot successfully complete these procedures, contact your next level of support.

Chapter task list

Task	See
Connecting the VF cable pairs 601–1200 to BIX connectors with the cross-connect	Procedure 6-1 on page 6-4
Connecting the VF cable pairs 601–1200 to BIX connectors with the cross-connect	Procedure 6-2 on page 6-9
Splicing the binder groups using BIX connectors	Procedure 6-3 on page 6-14
Connecting the VF cable pairs to BIX connectors without the cross-connect	Procedure 6-4 on page 6-16
Connecting the VF cable pairs 601–1200 to 710 or MS ² DPM connectors with cross-connect	Procedure 6-5 on page 6-23
Connecting the VF cable pairs 1–600 to 710 or MS ² DPM connectors with cross-connect	Procedure 6-6 on page 6-30
Splicing the binder groups using 710 or MS ² DPM connectors	Procedure 6-7 on page 6-33
Connecting the outside plant cable pairs to 710 or MS ² DMP connectors without cross-connect	Procedure 6-8 on page 6-36

Prerequisites for installation

The prerequisites for routing and terminating the VF cabling include:

- The cabinet has been mounted on the selected concrete pad as defined in Chapters 1 through 5.
- All hardware and materials are available and have been checked for completeness and readiness for the installation.
 - customer supplied outside plant cable hole and conduit plugging compound
- All the required drawings, local installation instructions, job specifications, and other documentation are available and ready for use.
- Route the binder groups to connectors 601–1200 first (this group is on the left side of the cross-connect frame).

Precautions

The following safety precautions should be observed at all times during the OSP cable bonding and grounding procedures:

- No equipment should be installed until the cabinet is firmly secured to its mounting pad, as described in this procedure.
- Do not open the front or rear doors unless the cabinet is firmly secured to the mounting pad.
- Observe all NEC and local codes for electrical wiring.



CAUTION

Local wiring codes

The procedures in this chapter are recommended guidelines; be sure to follow all local codes for wiring procedures.

Cable entry

The S800A cabinet is constructed with cable conduit entry ports located at the bottom of the end compartments of the cabinet.

Termination compartment

Table 6-1 shows where the OSP cabling has been pulled into the termination compartment (see Chapter 4, “Installing the OSP cables”) and how much slack has been pulled for cable routing.

Table 6-1
OSP cable entry locations and lengths

When you pull the cable for	Into this termination compartment conduit opening at location	Then leave this number of feet of cable for routing
VF cable pairs 1–600	far left	10 ft (3.1 m)
VF cable pairs 601–1200	middle left	12 ft (3.7 m)
VF or miscellaneous pairs	middle right	25 ft (7.6 m)
T1 distribution or maintenance pairs	middle right	5 ft (1.5 m)
Fiber	far right	25 ft (7.6 m)

Procedure 6-1

Connecting the VF cable pairs 601–1200 to BIX connectors with the cross-connect

This procedure shows how to connect VF cable pairs 601 to 1200 to BIX connectors with the cross-connect facility installed.

The installation steps outlined in this procedure are suggested procedures. Operating companies may complete the steps per their own cross-connect practices.

Reference information for the SPC signal pair assignments and specific connector pin designations is contained in Chapter 13, “Cabinet and equipment wiring and cabling”.

Connections between BIX and VF line protectors are factory installed using 24-gauge wires. Electronic equipment is connected to the protector assembly by connectorized cable assemblies.

The recommended layout is to reserve the first 12 connectors in each column as feeder (color coded green). Connector numbers 11 and 12 in the second column are vacant. The remaining vacant positions in each column are designated for distribution (color coded blue) and OSP DS1 terminations.

Because of the limited space and density of the cable routing, keep cable slack to a minimum.

Fuse links should be spliced into the VF pairs outside the cabinet.

Ensure that a QCM2A or equivalent bond clamp(s) is installed on the outside cable (see Chapter 4, “Installing the OSP cables”).

Tools required

There are no special tools required for completing this procedure. Use splicing tools normally used for terminating BIX connectors.

—continued—

Procedure 6-1 (continued)

Connecting the VF cable pairs 601–1200 to BIX connectors with the cross-connect

Action

Step	Action
1	Remove the connectors and retainers (color coded blue) from their cartons.
2	Attach the connectors and the retainers to the cross-connect position on the swing frame (see Figure 6-1 on page 6-6).
3	Install the retainers.
4	Plug in the connectors.
5	Divide the VF cable into 25-pair bundles.
6	Route each 25-pair bundle up the left side cable ladder in their proper pair count order from top to bottom following standard color code assignments.
7	Route the binder groups to connectors 601–1200. Note: This group is on the left side of the cross-connect frame. All connectors are numbered on the front of the swing frame (see Figure 6-1 on page 6-6 and Figure 6-2 on page 6-7).
8	Form cabling toward the hinge side of the swing frame. Note: Be sure to maintain 10–12 inches of slack to allow the swing frame to open and close (see Figure 6-3 on page 6-8).
9	Wrap the ends with vinyl tape to keep the binder groups organized until you are ready to splice.
10	Tie wrap each bundle to its appropriate connector position in the cross-connect.
11	Tie down unused pairs for future use.
12	Route each 25-pair binder group through the openings in the swing frame to the corresponding connector at the front of the frame.

—continued—

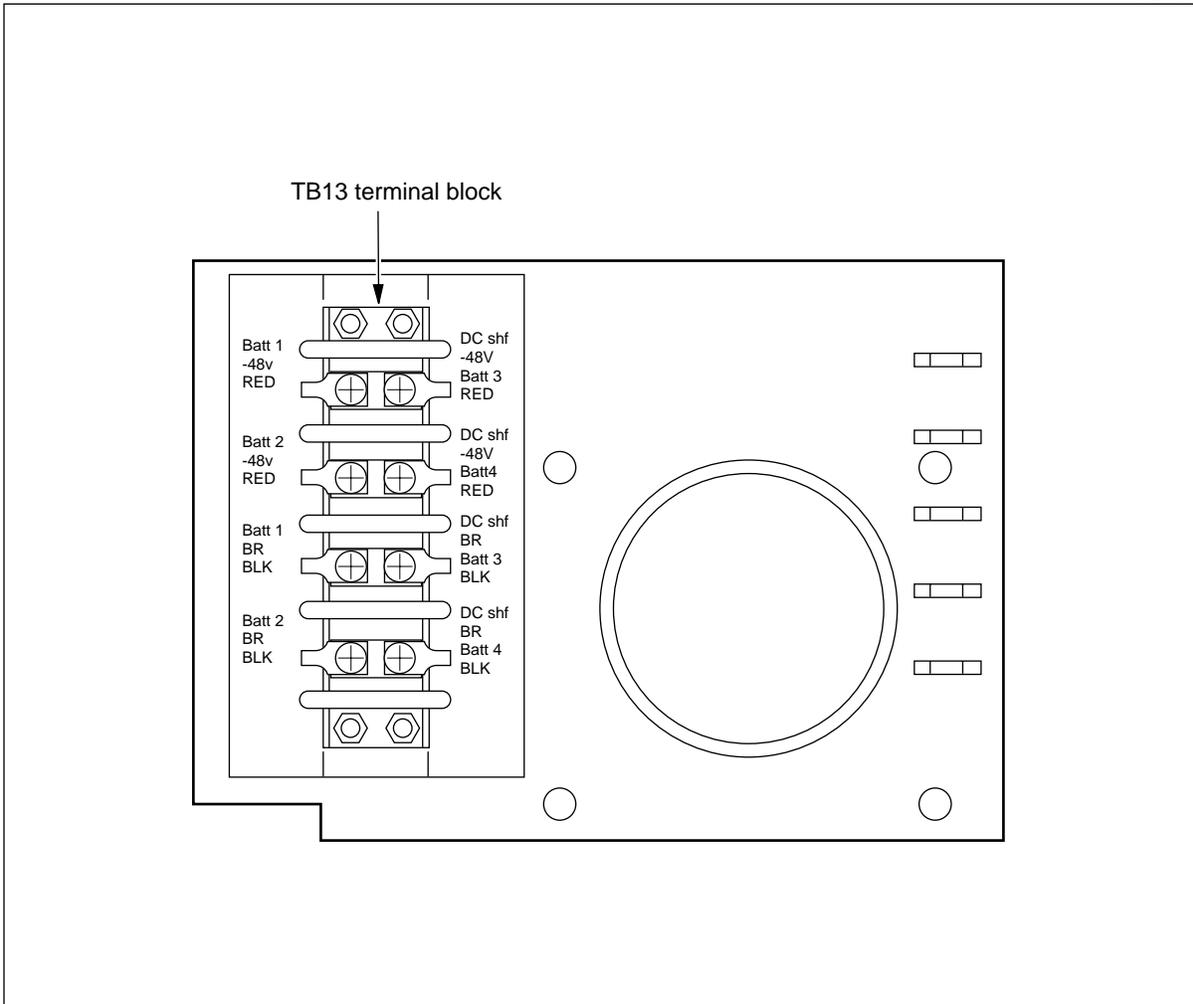
6-6 Routing and terminating the VF cables

Procedure 6-1 (continued)

Connecting the VF cable pairs 601–1200 to BIX connectors with the cross-connect

Figure 6-1
VF cable terminations to BIX cross-connect

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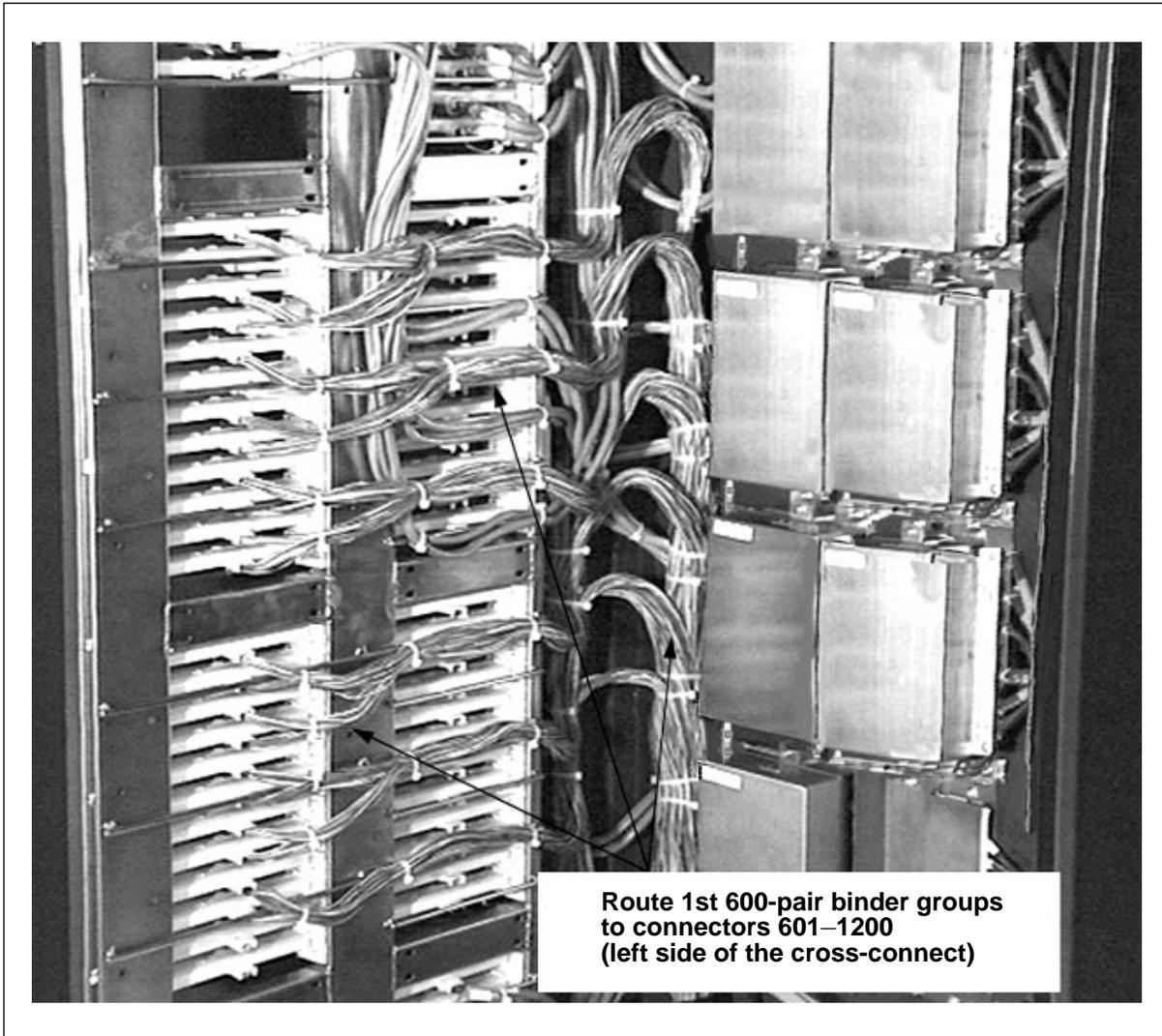
—continued—

Procedure 6-1 (continued)

Connecting the VF cable pairs 601–1200 to BIX connectors with the cross-connect

Figure 6-2

Route the first 600-pair binder groups to connectors 601–1200



—continued—

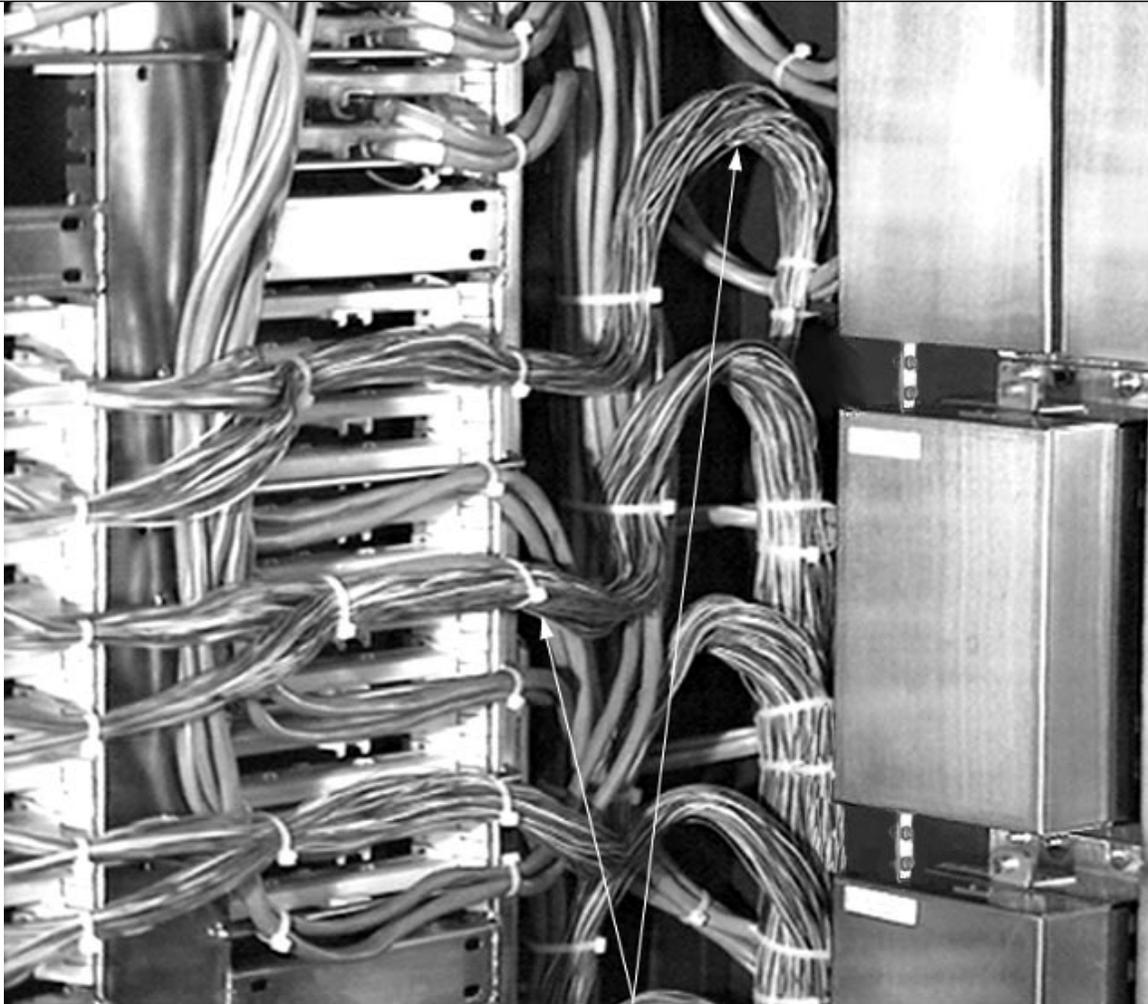
6-8 Routing and terminating the VF cables

Procedure 6-1 (continued)

Connecting the VF cable pairs 601–1200 to BIX connectors with the cross-connect

Figure 6-3

Form the first cable with 10–12 inches of slack



Tie wrap binder groups and connectors - form 10–12 inches of slack toward inside ladder

—end—

Procedure 6-2

Connecting the VF cable pairs 1–600 to BIX connectors with the cross-connect

This procedure shows how to connect VF cable pairs 1 to 600 to BIX connectors with the cross-connect facility installed.

The installation steps outlined in this procedure are suggested procedures. Operating companies may complete the steps per their own cross-connect practices.

Route the binder groups to connector pairs 1–600 after pair count 601–1200. This group is on the right side of the cross-connect frame. All connectors are numbered on the front of the swing frame. See Figure 6-1 on page 6-6 and Figure 6-4 on page 6-11.

Reference information for the SPC signal pair assignments and specific connector pin designations is contained in Chapter 13, “Cabinet and equipment wiring and cabling”.

Connections between BIX and VF line protectors are factory installed using 24-gauge wires. Electronic equipment is connected to the protector assembly by connectorized cable assemblies.

Because of the limited space and density of the cable routing, keep cable slack to a minimum.

Fuse links should be spliced into the VF pairs outside the cabinet.

Ensure that a QCM2A or equivalent bond clamp(s) is installed on the outside cable (see Chapter 4, “Installing the OSP cables”).

Tools required

There are no special tools required for completing this procedure. Use splicing tools normally used for terminating BIX connectors.

—continued—

6-10 Routing and terminating the VF cables

Procedure 6-2 (continued)

Connecting the VF cable pairs 1–600 to BIX connectors with the cross-connect

Action

Step	Action
1	Remove the connectors and retainers (color coded blue) from their cartons.
2	Attach the connectors and the retainers to the cross-connect position on the swing frame (see Figure 6-1 on page 6-6). Note: The recommended layout is to reserve the first 12 connectors in each column as feeder (color coded green). Connector numbers 11 and 12 in the second column are vacant. The remaining vacant positions in each column are designated for distribution (color coded blue) and OSP DS1 terminations.
3	Install the retainers.
4	Plug in the connectors.
5	Divide the VF cable into 25-pair bundles.
6	Route each 25-pair bundle up the left side cable ladder in their proper pair count order from top to bottom following standard color code assignments.
7	Route the binder groups to connectors 1–600. Note: This group is on the right side of the cross-connect. All connectors are numbered on the front of the swing frame (see Figure 6-1 on page 6-6 and Figure 6-4 on page 6-11).
8	Form cabling toward the hinge side of the swing frame. Note: Be sure to maintain 6–8 inches of slack to allow the swing frame to open and close (see Figure 6-5 on page 6-12).
9	Wrap the ends with vinyl tape to keep the binder groups organized until you are ready to splice.
10	Tie wrap each bundle to its appropriate connector position in the cross-connect.
11	Tie down unused pairs for future use.
12	Route each 25-pair binder group through the openings in the swing frame to the corresponding connector at the front of the frame (see Figure 6-6 on page 6-13).

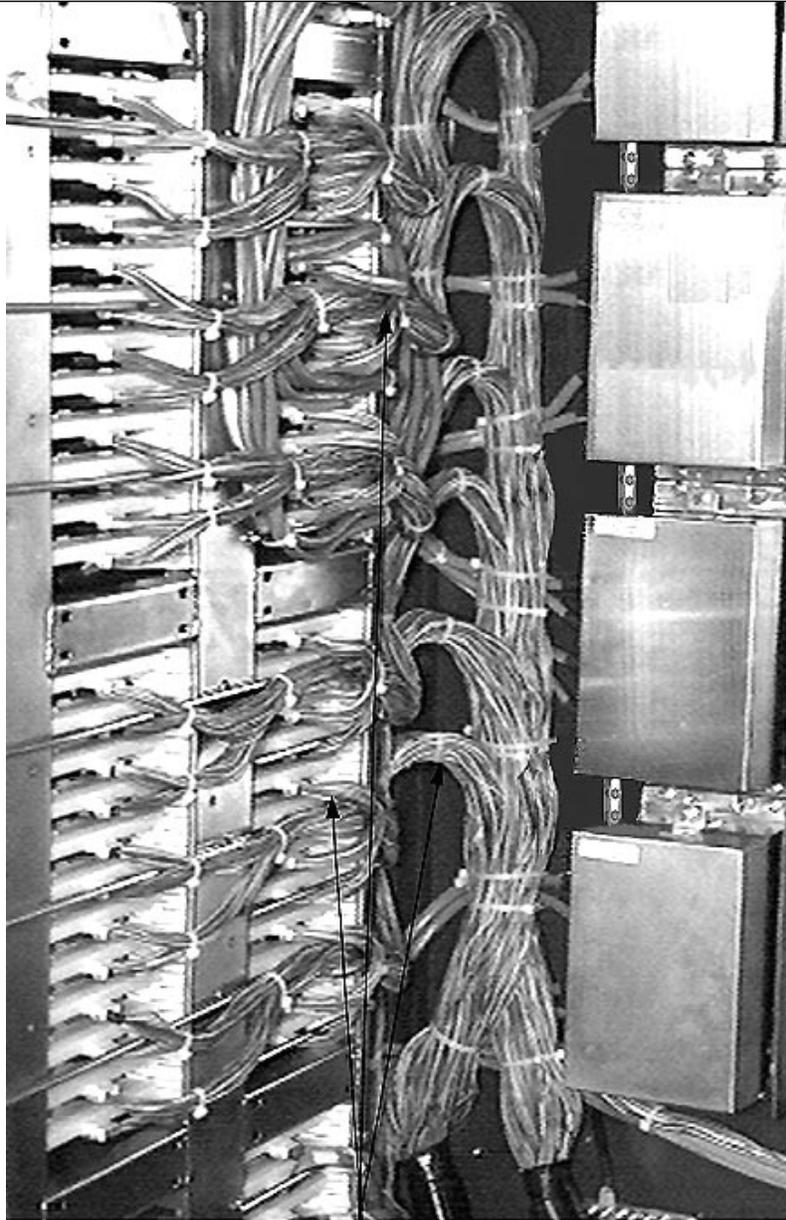
—continued—

Procedure 6-2 (continued)

Connecting the VF cable pairs 1–600 to BIX connectors with the cross-connect

Figure 6-4

Route the second 600-pair binder groups to connectors 1–600



**Route 2nd 600-pair binder
groups to connectors 1–600
(right side of swing frame)**

—continued—

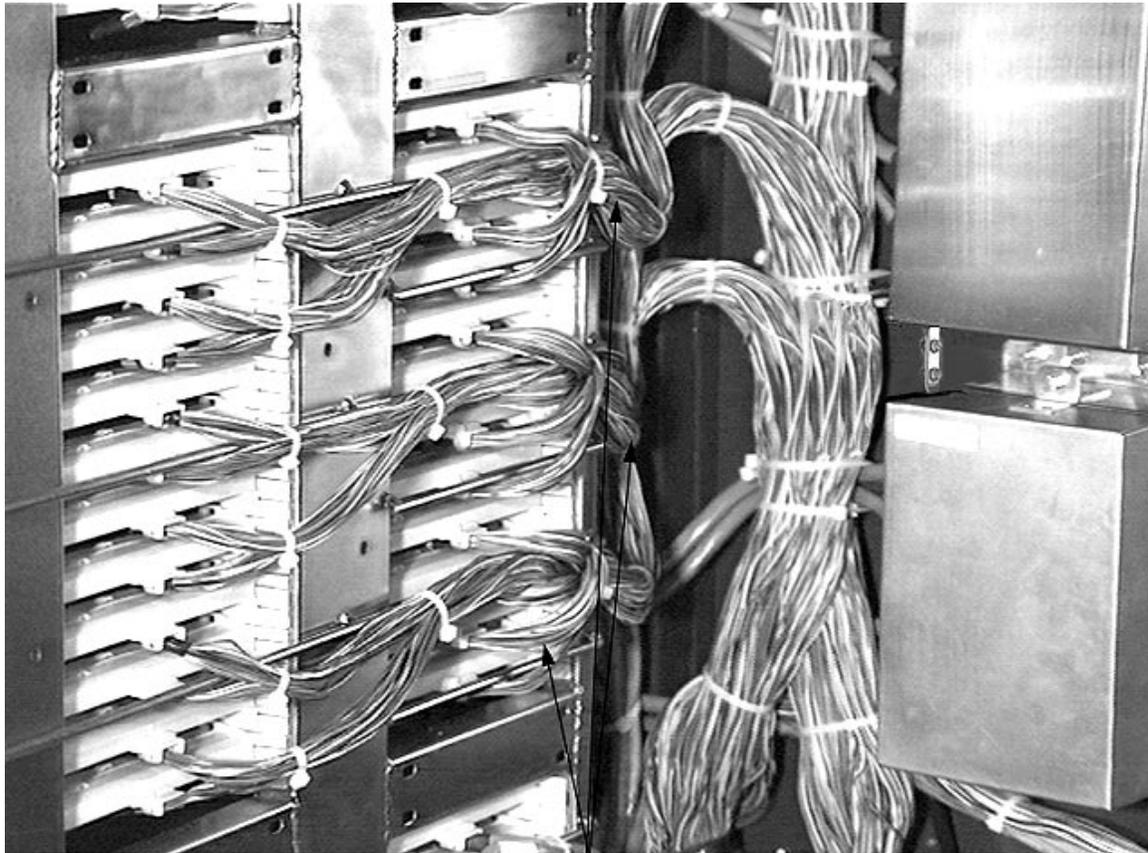
6-12 Routing and terminating the VF cables

Procedure 6-2 (continued)

Connecting the VF cable pairs 1–600 to BIX connectors with the cross-connect

Figure 6-5

Form the second cable with 6–8 inches of slack



Tie wrap binder groups and connectors - form 6–8 inches of slack toward inside ladder

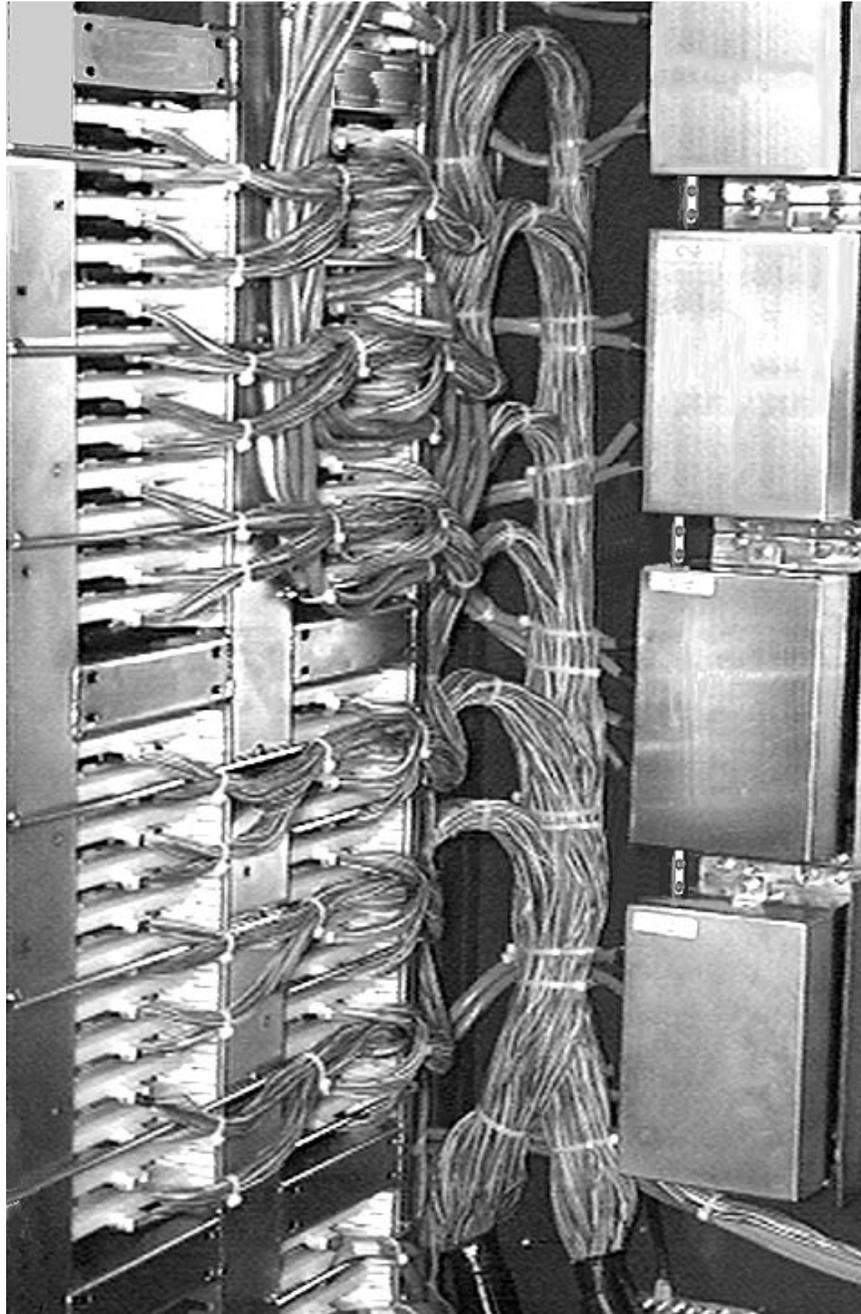
—continued—

Procedure 6-2 (continued)

Connecting the VF cable pairs 1–600 to BIX connectors with the cross-connect

Figure 6-6

Completed cable terminations for BIX with cross-connect



—end—

Procedure 6-3

Splicing the binder groups using BIX connectors

This procedure shows how to splice binder groups for VF cable pairs 1–1200 for installations using BIX connectors with the cross-connect facility.

The installation steps outlined in this procedure are suggested procedures. Operating companies may complete the steps per their own cross-connect practices.

All connectors are numbered on the front of the swing frame.

Reference information for the SPC signal pair assignments and specific connector pin designations is contained in Chapter 13, “Cabinet and equipment wiring and cabling”.

Connections between BIX and VF line protectors are factory installed using 24-gauge wires. Electronic equipment is connected to the protector assembly by connectorized cable assemblies.

Because of the limited space and density of the cable routing, keep cable slack to a minimum.

Fuse links should be spliced into the VF pairs outside the cabinet.

Ensure that a QCM2A or equivalent bond clamp(s) is installed on the outside cable (see Chapter 4, “Installing the OSP cables”).

Tools required

There are no special tools required for completing this procedure. Use splicing tools normally used for terminating BIX connectors.

Note: Nortel Networks recommends using a QTBIX16A wire termination tool to terminate cable pairs.

—continued—

Procedure 6-3 (continued)

Splicing the binder groups using BIX connectors

Action

Step	Action
------	--------



CAUTION

Use the proper QTBI16A cutting edge

The QTBI16A tool connects each wire to the BIX connector and trims off the excess. Make sure that the cutting edge is on the correct side. A button on the handle selects either the “Cut” or “No Cut” position.

- 1 Use a QTBI16A tool (black blade down) to terminate cable pairs to each connector on the front of the swing frame.
- 2 Remove the connector assembly from the retainers.
- 3 Rotate the connector assemblies so that the outside plant cabling exits through the rear of the connector retainer.
- 4 Push connector inside the retainer to leave the front side for the cross-connect.

Note: The recommended layout is to reserve the first 12 connectors in each column as feeder (color coded green). Connector numbers 11 and 12 in the second column are vacant. The remaining vacant positions in each column are designated for distribution (color coded blue) and OSP DS1 terminations.

- 5 Plug the VF cable entry hole with epoxy or equivalent compound when all OSP cable terminations are complete. When done, close the termination compartment door.

—end—

Procedure 6-4

Connecting the VF cable pairs to BIX connectors without the cross-connect

This procedure shows how to connect VF cable pairs to BIX connectors without the cross-connect facility installed.

The installation steps outlined in this procedure are suggested procedures. Operating companies may complete the steps per their own cross-connect practices.

Reference information for the SPC Signal Pair Assignments and specific connector pin designations is contained in Chapter 13, “Cabinet and equipment wiring and cabling”.

Connections between BIX and VF line protectors are factory installed using 24-gauge wires. Electronic equipment is connected to the protector assembly by connectorized cable assemblies.

Because of the limited space and density of the cable routing, keep cable slack to a minimum.

Fuse links should be spliced into the VF pairs outside the cabinet.

Ensure that a QCM2A or equivalent bond clamp(s) is installed on the outside cable (see Chapter 4, “Installing the OSP cables”).

Special tools required

There are no special tools required for completing this procedure. Use splicing tools normally used for terminating BIX connectors.

—continued—

Procedure 6-4 (continued)

Connecting the VF cable pairs to BIX connectors without the cross-connect

Action

Step	Action
1	Divide the VF cable into 25-pair bundles.
2	Install binder group identification ties as needed (see Figure 6-7 on page 6-18).
3	Route each 25-pair bundle toward the left rear cable ladder.
4	Position the binder groups from the OSP cables in proper sequence.
5	Tie wrap them against the left rear ladder supports.
6	Route the binder groups to the connectors for VF pairs 1–300 first.
7	Run each bundle in its proper pair count following the standard color code assignments.
8	Tie wrap the groups to the retainers in their proper pair count order from top to bottom following standard color code assignments.
9	Wrap the ends with vinyl tape to keep the binder groups organized until you are ready to splice.
10	Tie off each binder group to its appropriate connector position in the swing frame and form each 25-pair bundle back toward the hinge side of the swing frame (see Figure 6-8 on page 6-19). Note: Be sure to maintain 8–10 inches of slack to allow the swing frame to open and close.
11	Route the binder groups to connectors 301–550.
12	Tie wrap groups to retainers in their proper pair count order from top to bottom, following standard color code assignments.

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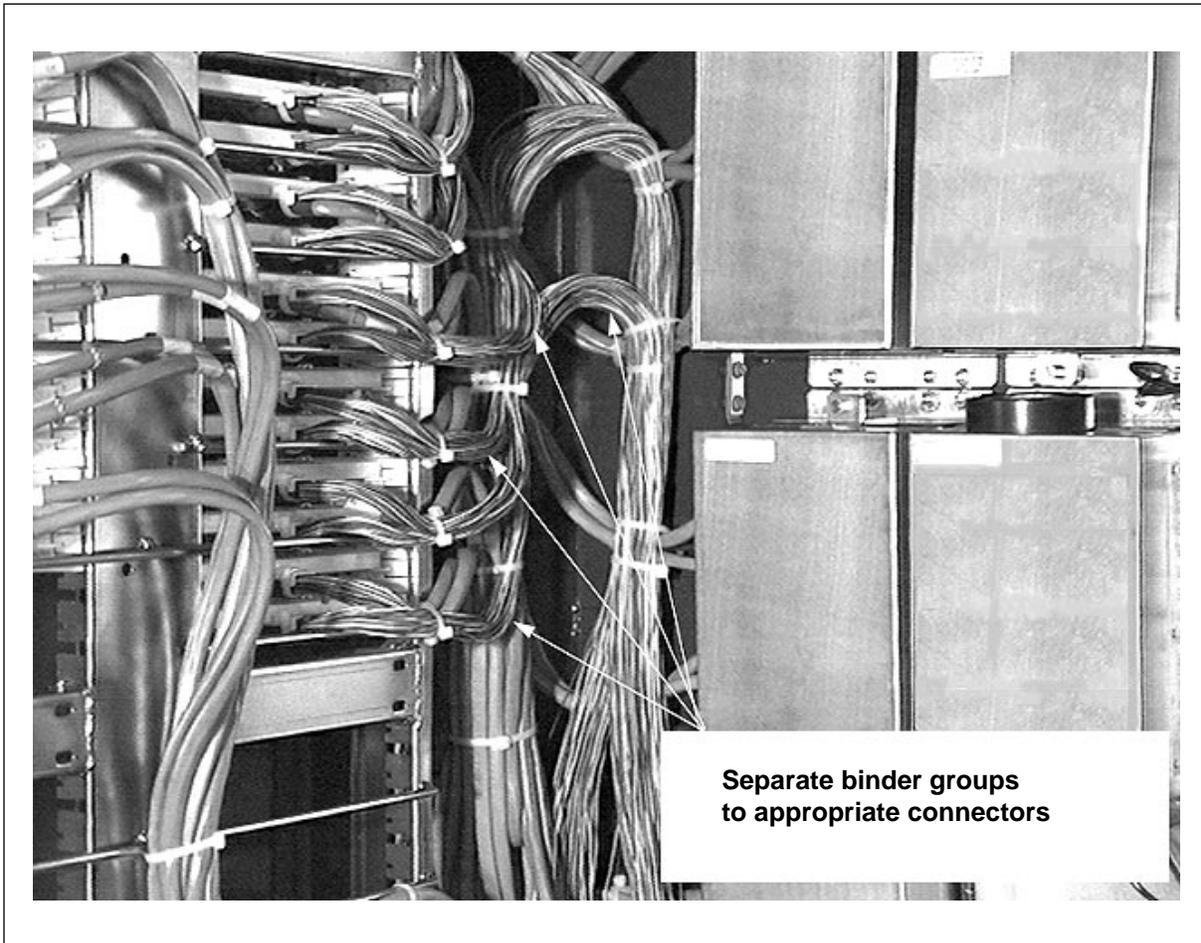
6-18 Routing and terminating the VF cables

Procedure 6-4 (continued)

Connecting the VF cable pairs to BIX connectors without the cross-connect

Figure 6-7

Separate 25-pair binder groups from OSP cable



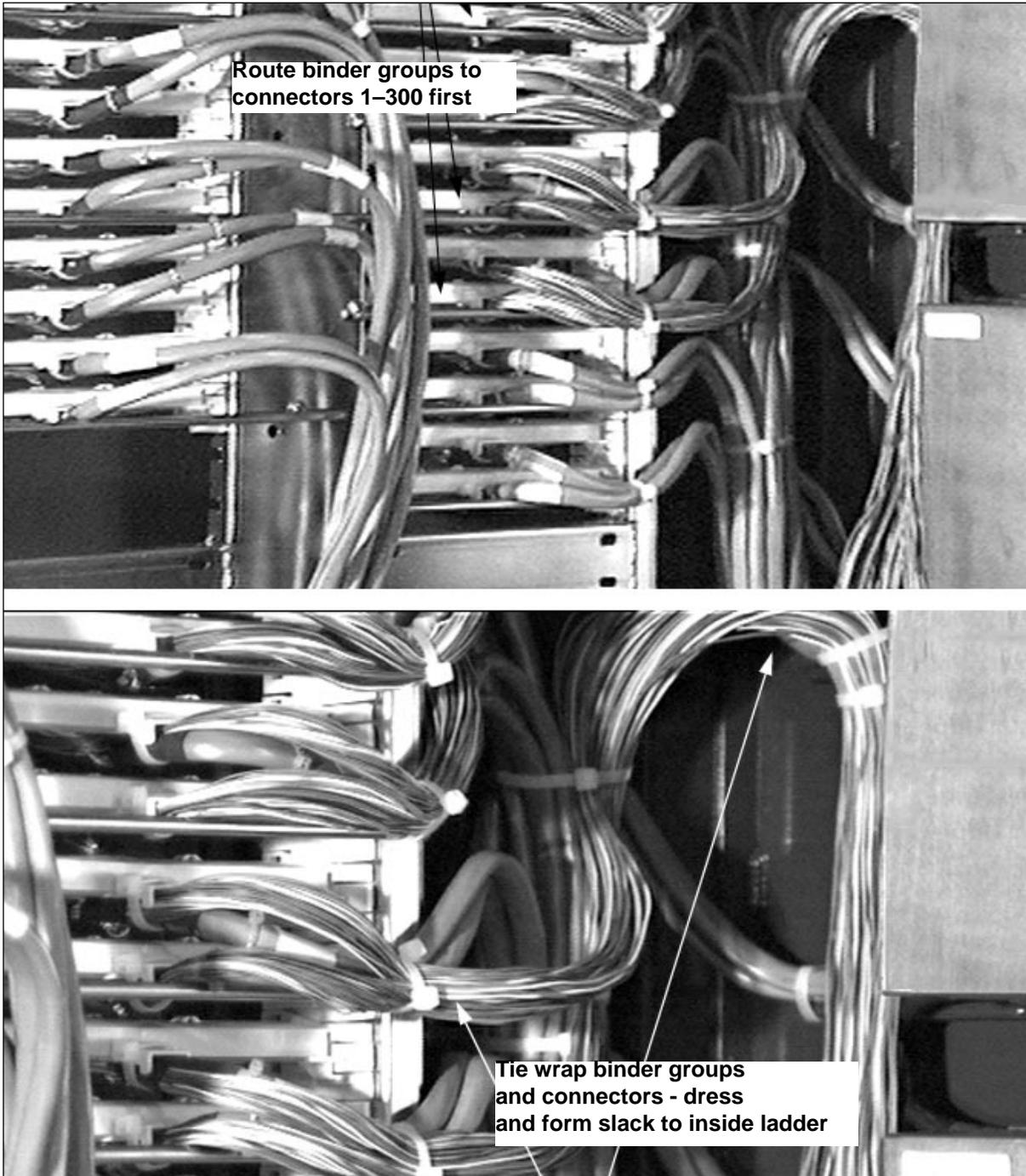
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Procedure 6-4 (continued)

Connecting the VF cable pairs to BIX connectors without the cross-connect

Figure 6-8

Route binder groups to connector pairs 1–300 on the swing frame



—continued—

6-20 Routing and terminating the VF cables

Procedure 6-4 (continued)

Connecting the VF cable pairs to BIX connectors without the cross-connect

Step	Action
13	Wrap the ends with vinyl tape to keep the binder groups organized until you are ready to splice (see Figure 6-8 on page 6-19 and Figure 6-9 on page 6-21).
14	Dress and form each 25-pair bundle toward the hinge side of the swing frame. Note: Be sure to maintain 10–12 inches of slack to allow the swing frame to open and close. Tie down unused pairs for future use.
15	Route all 25-pair binder group through the openings in the swing frame to the corresponding connector at the front of the frame (see Figure 6-10 on page 6-22).
16	Tie-wrap each binder group back to the horizontal cable ladder.
17	Close the swing frame.
18	Move to the front of the swing frame.
19	Open the retainer cover.



CAUTION

Use proper QTBI16A cutting edge

The QTBI16A tool connects each wire to the BIX connector and trims off the excess. Make sure that the cutting edge is on the correct side. A button on the handle selects either the “Cut” or “No Cut” position.

20	Use a QTBI16A tool (black blade down) to terminate cable pairs towards the front of the connector.
21	Complete pairs 1–300 first, then 301–550.
22	Plug the VF cable entry hole with epoxy or equivalent compound when all OSP cable terminations are complete.
23	Close the termination compartment door.

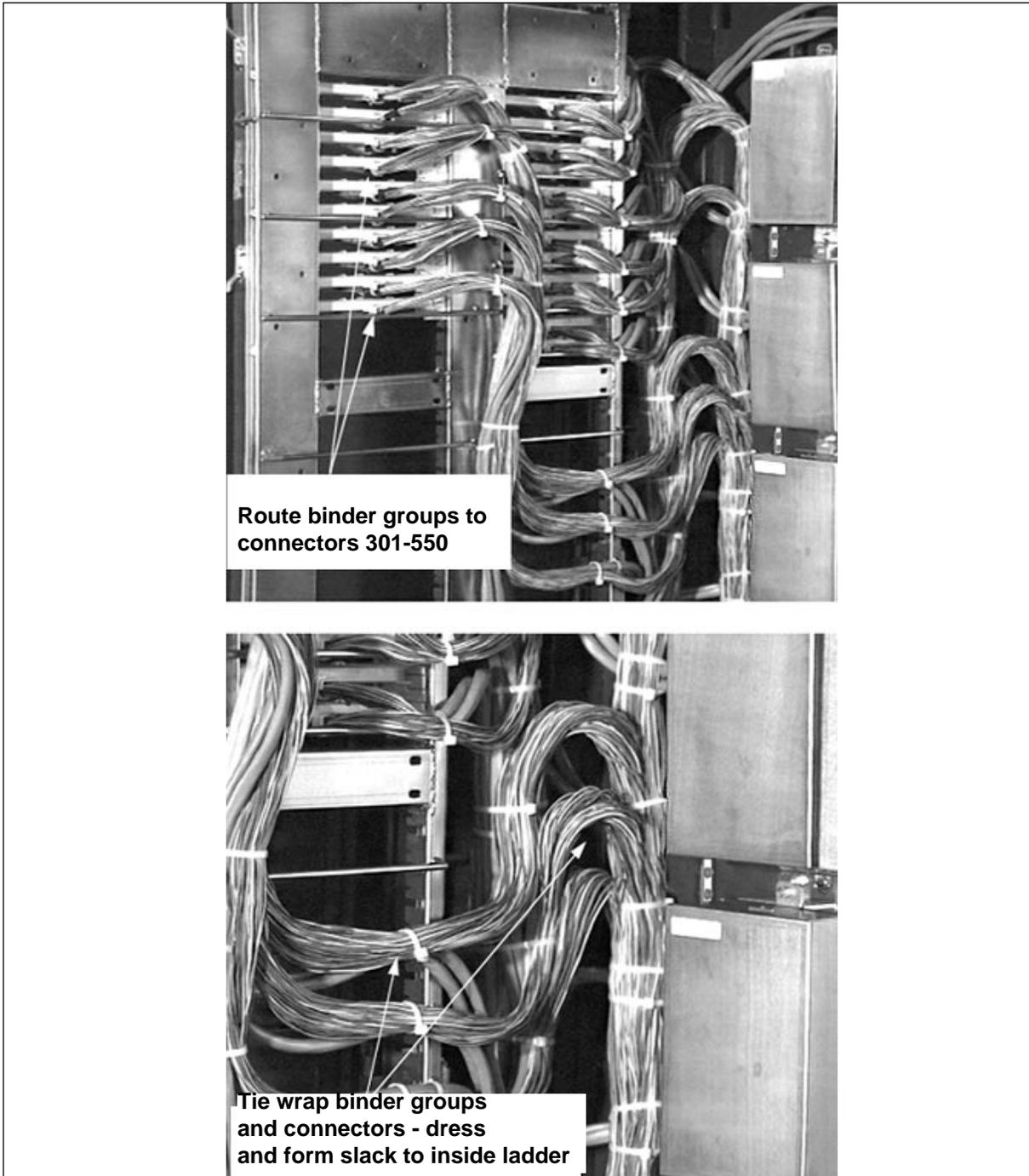
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Procedure 6-4 (continued)

Connecting the VF cable pairs to BIX connectors without the cross-connect

Figure 6-9

Route binder groups to connector pairs 301–550 on the swing frame



—continued—

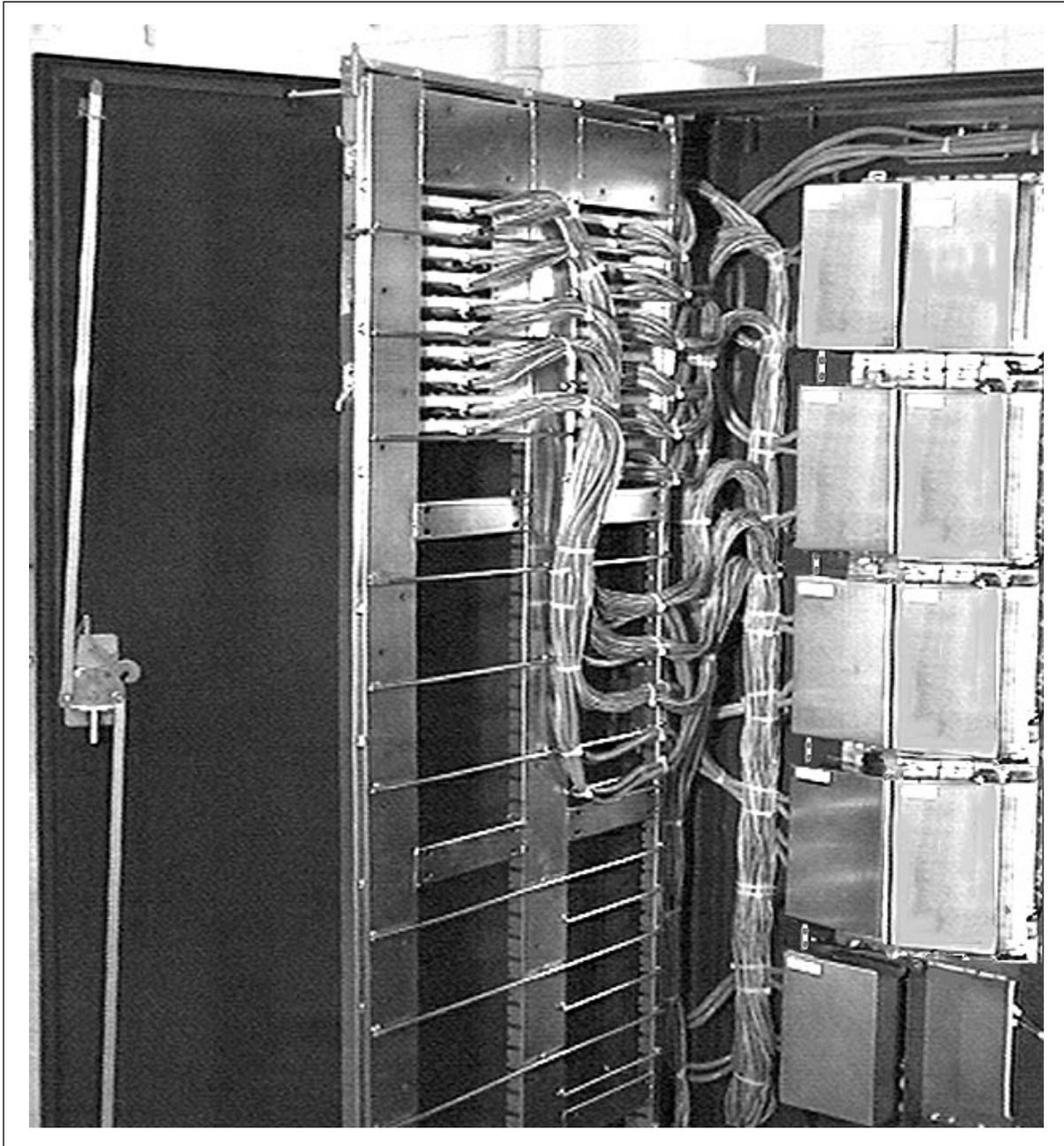
6-22 Routing and terminating the VF cables

Procedure 6-4 (continued)

Connecting the VF cable pairs to BIX connectors without the cross-connect

Figure 6-10

Completed cable terminations for BIX without cross-connect



—end—

Procedure 6-5

Connecting the VF cable pairs 601–1200 to 710 or 3M MS² DPM connectors with cross-connect

This procedure describes installation and splicing procedures for VF cable pairs 601 to 1200 connecting to column 3 on the binding post Serving Area Interface (SAI) cross-connect option in the Series 800A cabinet.

Support bars are attached to the swing frame door. They are mounted horizontally across the door and are counted 1 to 12 from the top to the bottom. They are used to attach the splicing tool head and the binder groups.

The installation steps outlined in this procedure are suggested procedures. Operating companies may complete the steps per their own cross-connect practices.

Route the binder groups to connector pairs 601–1200 before pair count 1-600. This group is on the right side of the cross-connect frame. All connectors are numbered on the front of the swing frame (see Figure 6-11 on page 6-25).

Reference information for the SPC signal pair assignments and specific connector pin designations is contained in Chapter 13, “Cabinet and equipment wiring and cabling”.

There are two connector options available with the Series 800A binding post cross-connect: 710-SC1-25 (capless female) and 3M MS² 4000D Super-Mini connector. The Series 800A cabinet may have 710 or 3M connectors installed on the swing frame but not a combination of both. Connections between 710/3M and VF line protectors are factory installed using 24-gauge wires. Electronic equipment is connected to the protector assembly by connectorized cable assemblies.

Because of the limited space and density of the cable routing, keep cable slack to a minimum.

Fuse links should be spliced into the VF pairs outside the cabinet.

Ensure that a QCM2A or equivalent bond clamp(s) is installed on the outside cable (see Chapter 4, “Installing the OSP cables”).

—continued—

Procedure 6-5 (continued)

Connecting the VF cable pairs 601–1200 to 710 or 3M MS2 DPM connectors with cross-connect

Special tools required

For 710 connectors, use the Western Electric 945A Splicing Tool Kit. For 3M connectors, use the 4045K Universal Splicing Rig (or equivalent splicing kit for 3M MS² connectors).

Support bars and binder groups

Table 6-2 (pair count top to bottom) outlines each binder group and its respective swing frame support bar position.

Table 6-2
Routing binder groups across the swing frame (pair count top to bottom)

Support bar	VF line number	Column 1 binder group Distribution Pairs 601–1200	Column 2 SPC cables Feeder Pairs 1–600	Column 3 binder group Distribution Pairs 1–600
1	1–25	White / Blue	1–25	White / Blue
1	26–50	White / Orange	26–50	White / Orange
2	51–75	White / Green	51–75	White / Green
2	76–96	White / Brown	76–100	White / Brown
3	97–121	White / Slate	101–125	White / Slate
3	122–146	Red / Blue	126–150	Red / Blue
4	147–171	Red / Orange	151–175	Red / Orange
4	172–192	Red / Green	176–200	Red / Green
5	193–217	Red / Brown	201–225	Red / Brown
5	218–242	Red / Slate	226–250	Red / Slate
6	243–267	Black / Blue	251–275	Black / Blue
6	368–288	Black / Orange	276–300	Black / Orange
7	289–313	Black / Green	301–325	Black / Green
7	314–338	Black / Brown	326–350	Black / Brown
8	339–363	Black / Slate	351–375	Black / Slate
8	364–384	Yellow / Blue	376–400	Yellow / Blue
9	385–409	Yellow / Orange	401–425	Yellow / Orange
9	410–434	Yellow / Green	426–450	Yellow / Green
10	435–459	Yellow / Brown	451–475	Yellow / Brown
10	460–480	Yellow / Slate	476–500	Yellow / Slate
11	481–505	Violet / Blue	501–525	Violet / Blue
11	506–530	Violet / Orange	526–550	Violet / Orange
12	531–555	Violet / Green	551–575	Violet / Green
12	556–576	Violet / Brown	576–600	Violet / Brown

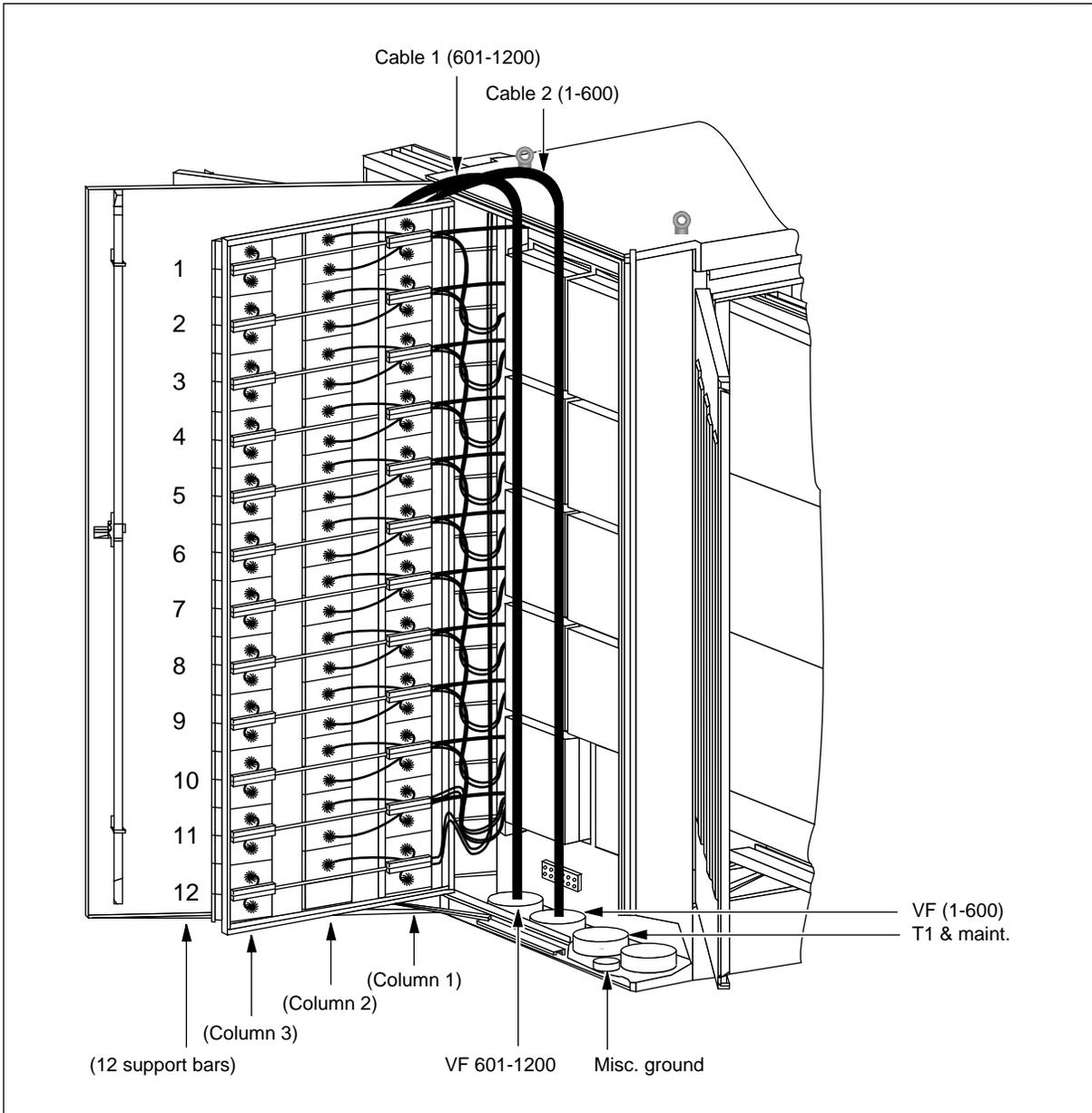
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Procedure 6-5 (continued)

Connecting the VF cable pairs 601–1200 to 710 or 3M MS2 DPM connectors with cross-connect

Figure 6-11
View of the serving area interface with binding post cross-connect

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—continued—

6-26 Routing and terminating the VF cables

Procedure 6-5 (continued)

Connecting the VF cable pairs 601–1200 to 710 or 3M MS2 DPM connectors with cross-connect

Step	Action
1	Route and dress the column 3 binder groups from the top of the outside plant compartment to the bottom. Note: Follow the binder group order in Table 6-2 on page 6-24.
2	Separate the appropriate binder group (per Table 6-2 on page 6-24) at each of the two cable ladder bars on the left side of the compartment. Note: Always place one tie wrap above and one below the binder group that is being separated from the cable.
3	Extend the cables across the horizontal swing frame support bars (see Figure 6-12 on page 6-27).
4	Continue to secure the remaining column 3 binder groups up the cable ladder (see Figure 6-13 on page 6-28).
5	Extend the cables across the cable support bars and attach them to the first cabinet support bar using a tie wrap (see Figure 6-12 on page 6-27).
6	Route and tie wrap the column 3 binder groups on top of the existing cable (see Figure 6-14 on page 6-29).
7	Form the cables so they will compress on the ladder rung when tie wrapped. Note: Be sure to maintain about 6–8 inches of slack toward the hinge side of the swing frame.
8	Position Column 2 connectors above and below the support bar.
9	Route Column 3 binder group against the support bar.
10	Secure both connectors and the column 3 binder groups in this position.
11	Repeat all previous steps in this section until the last column 3 binder group has been separated from the 600-pair cable and routed to its respective position on the horizontal support bar (violet/ brown).

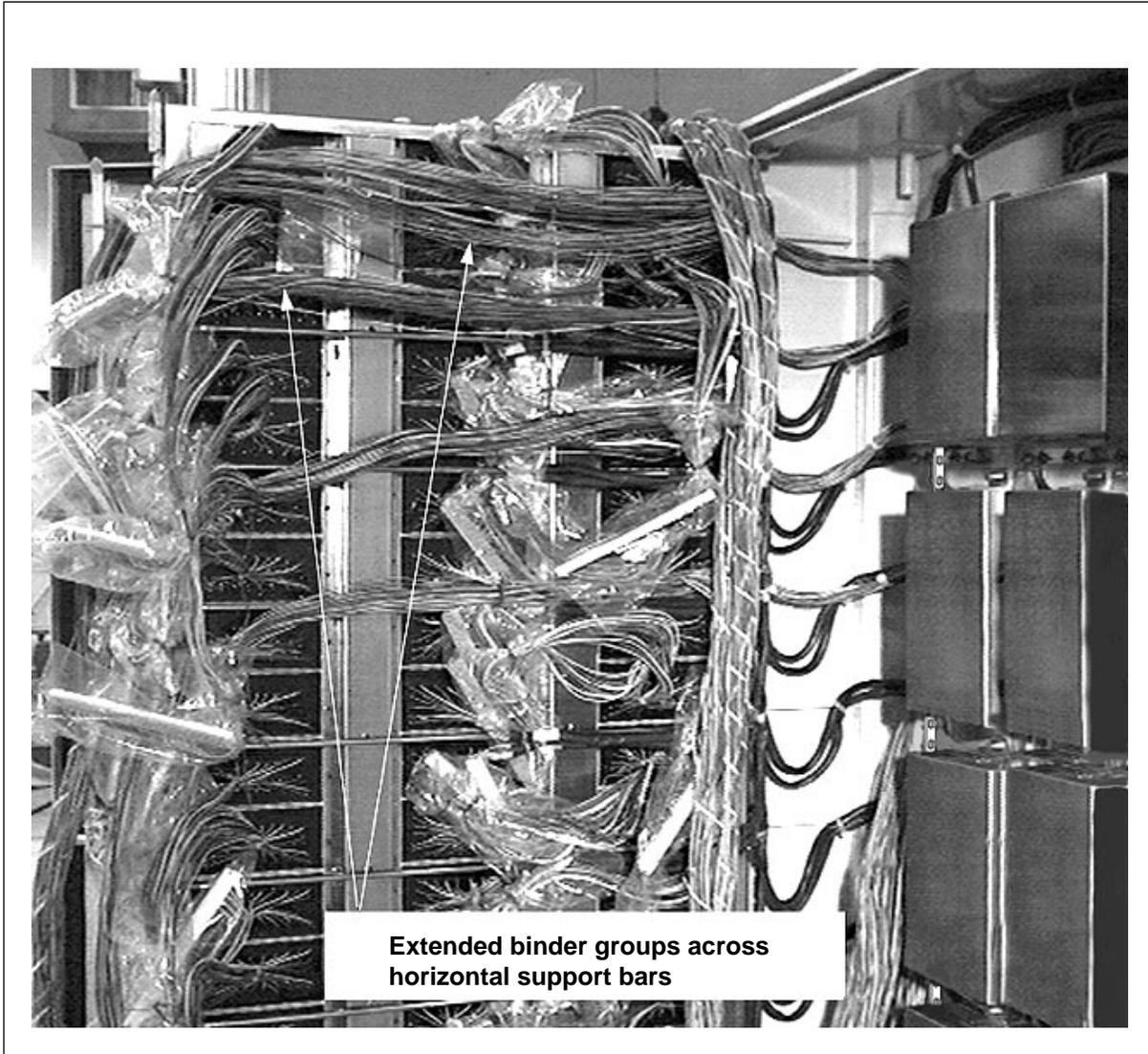
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Procedure 6-5 (continued)

Connecting the VF cable pairs 601–1200 to 710 or 3M MS2 DPM connectors with cross-connect

Figure 6-12

Extend binder groups across the swing frame support bars



—continued—

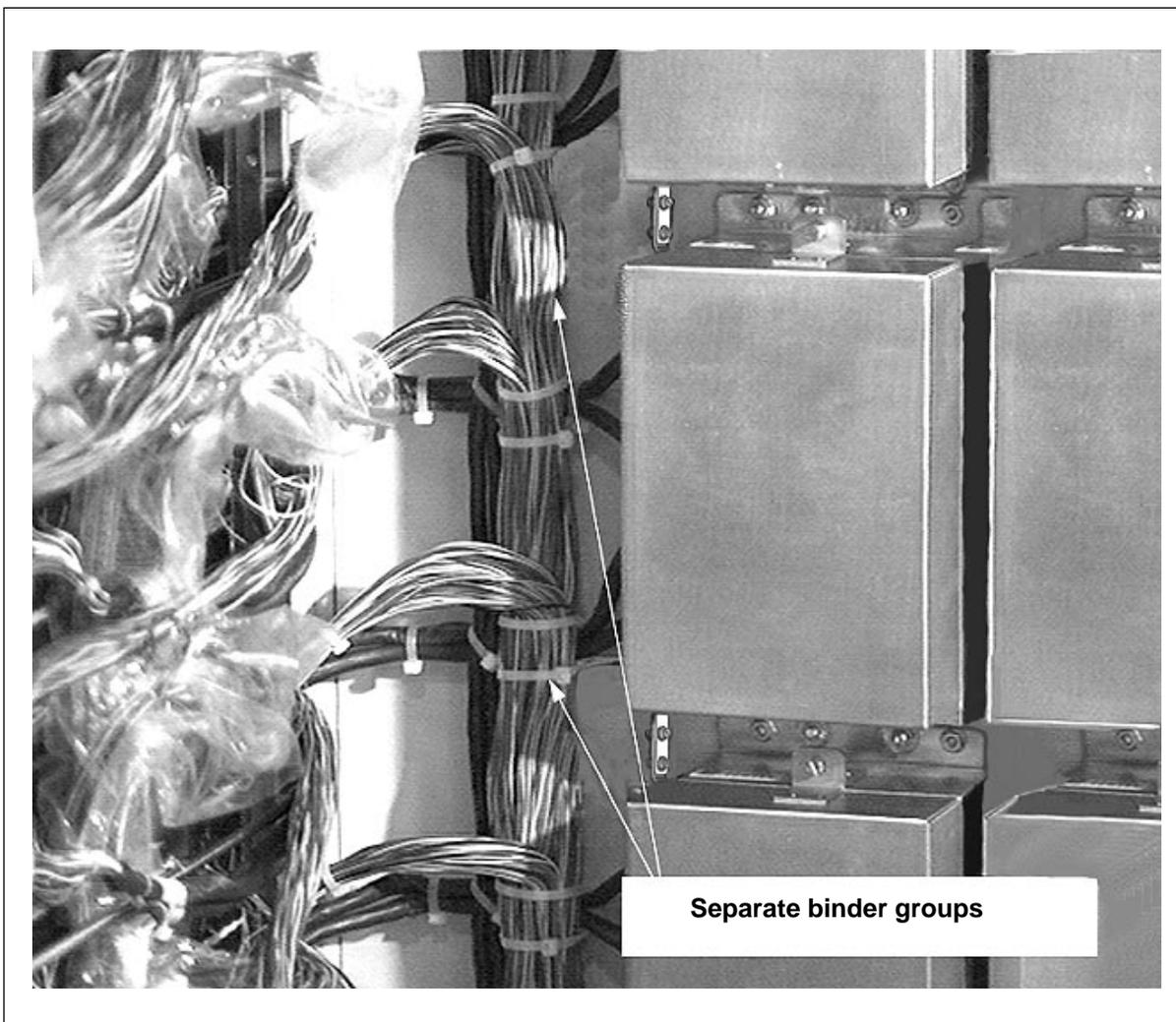
6-28 Routing and terminating the VF cables

Procedure 6-5 (continued)

Connecting the VF cable pairs 601–1200 to 710 or 3M MS2 DPM connectors with cross-connect

Figure 6-13

Separate the binder groups from the OSP cable



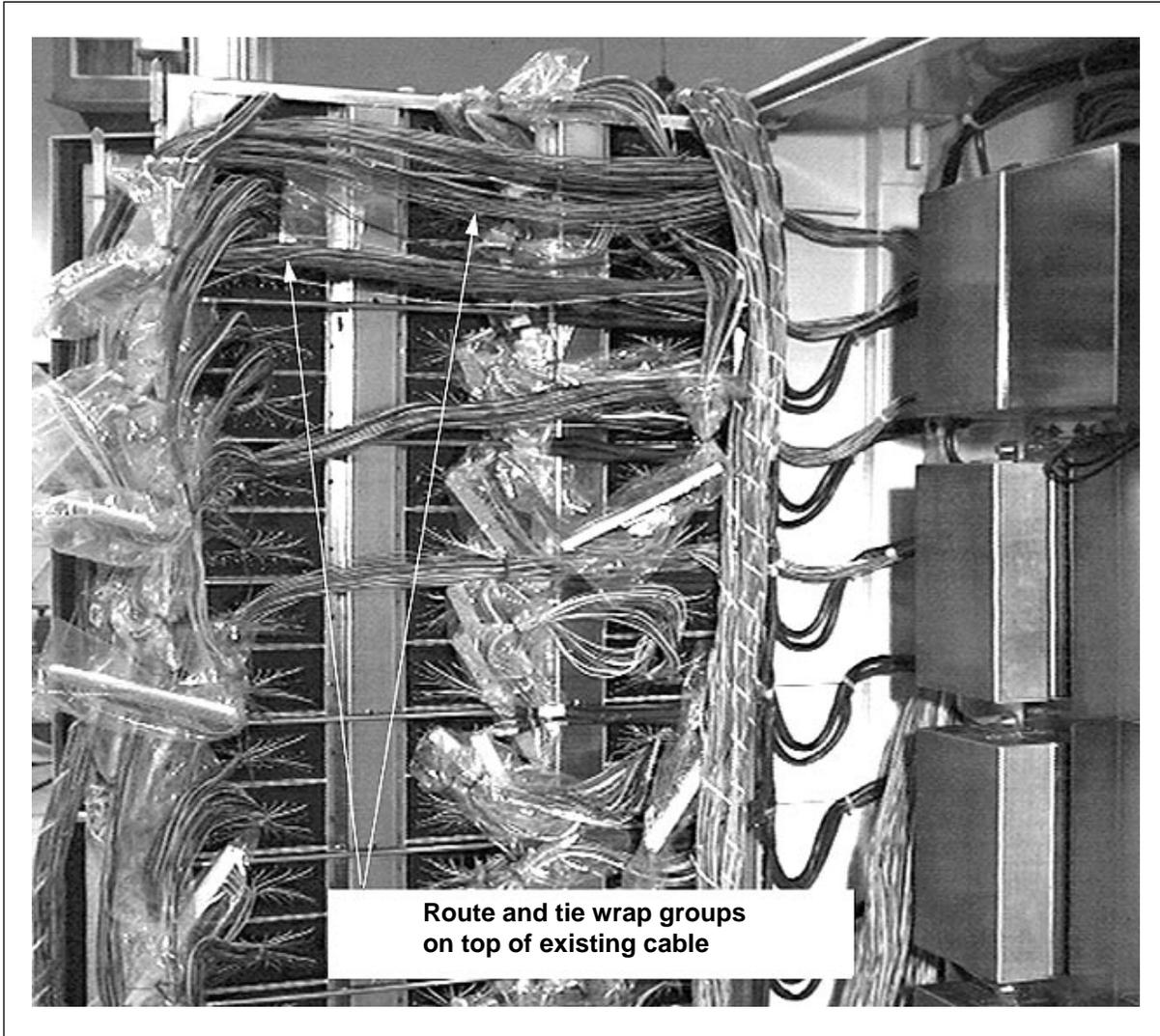
—continued—

Procedure 6-5 (continued)

Connecting the VF cable pairs 601–1200 to 710 or 3M MS2 DPM connectors with cross-connect

Figure 6-14

Tie wrap groups on top of existing cable



—end—

Procedure 6-6

Connecting the VF cable pairs 1–600 to 710 or 3M MS² DPM connectors with cross-connect

This procedure describes installation and splicing procedures for VF cable pairs 1 to 600 connecting to column 1 on the binding post Serving Area Interface (SAI) cross-connect option in the Series 800A cabinet.

Support bars are attached to the swing frame door. They are mounted horizontally across the door and are counted 1 to 12 from the top to the bottom. They are used to attach the splicing tool head and the binder groups.

The installation steps outlined in this procedure are suggested procedures. Operating companies may complete the steps per their own cross-connect practices.

Route the binder groups to connector pairs 1–600 after pair count 601–1200. This group is on the left side of the cross-connect frame. All connectors are numbered on the front of the swing frame (see Figure 6-11 on page 6-25).

Reference information for the SPC signal pair assignments and specific connector pin designations is contained in Chapter 13, “Cabinet and equipment wiring and cabling”.

There are two connector options available with the Series 800A binding post cross-connect: 710-SC1-25 (capless female) and 3M MS² 4000D Super-Mini connector. The Series 800A cabinet may have 710 or 3M connectors installed on the swing frame but not a combination of both. Connections between 710/3M and VF line protectors are factory installed using 24-gauge wires. Electronic equipment is connected to the protector assembly by connectorized cable assemblies.

Because of the limited space and density of the cable routing, keep cable slack to a minimum. Fuse links should be spliced into the VF pairs outside the cabinet.

Ensure that a QCM2A or equivalent bond clamp(s) is installed on the outside cable (see Chapter 4, “Installing the OSP cables”).

Special tools required

For 710 connectors use the Western Electric 945A Splicing Tool Kit. For 3M connectors use the 4045K Universal Splicing Rig (or equivalent splicing kit for 3M MS² connectors).

—continued—

Procedure 6-6 (continued)

Connecting the VF cable pairs 1–600 to 710 or 3M MS2 DPM connectors with cross-connect

Action

Step	Action
1	<p>Route and dress the column 1 binder groups from the top of the outside plant compartment to the bottom.</p> <p>Note 1: Follow the binder group order in Table 6-2 on page 6-24.</p> <p>Note 2: Separate the appropriate binder group (per Table 6-2 on page 6-24) at each of the two cable ladder bars on the left side of the compartment.</p> <p>Note 3: Always place one tie wrap above and one below the binder group that is being separated from the cable.</p>
2	<p>Extend the cables across the horizontal swing frame support bars (see Figure 6-12 on page 6-27).</p>
3	<p>Continue to secure the remaining binder groups up the cable ladder (see Figure 6-13 on page 6-28).</p>
4	<p>Extend the cables across the cable support bars and attach them to the first cabinet support bar using a tie wrap (see Figure 6-12 on page 6-27).</p>
5	<p>Route and tie wrap the column 1 binder groups on top of the existing cable (see Figure 6-14 on page 6-29).</p>
6	<p>Form the cables so they compress on the ladder rung when tie wrapped.</p> <p>Note: Be sure to maintain about 6–8 inches of slack toward the hinge side of the swing frame.</p>
7	<p>Position the column 2 connectors above and below the support bar.</p>
8	<p>Route the column 1 binder groups against the support bar (see Figure 6-15 on page 6-32).</p>
9	<p>Secure both connectors and the binder group in this position.</p>
10	<p>Repeat all previous steps in this section until the last column 1 binder group has been separated from the 600-pair cable and routed to its respective position on the horizontal support bar (violet/ brown).</p>
11	<p>Tie wrap the left and right ends of the top and bottom connectors to the support frame.</p>
12	<p>Pull on the tie wraps to secure the connectors and the binder group to the support frame.</p>
13	<p>Secure the right end of each connector by repeating this step.</p> <p>Note: Tie wraps should only be tight enough to hold the bundle secure. If you can not turn the tie wrap around the bundle it is too tight.</p>

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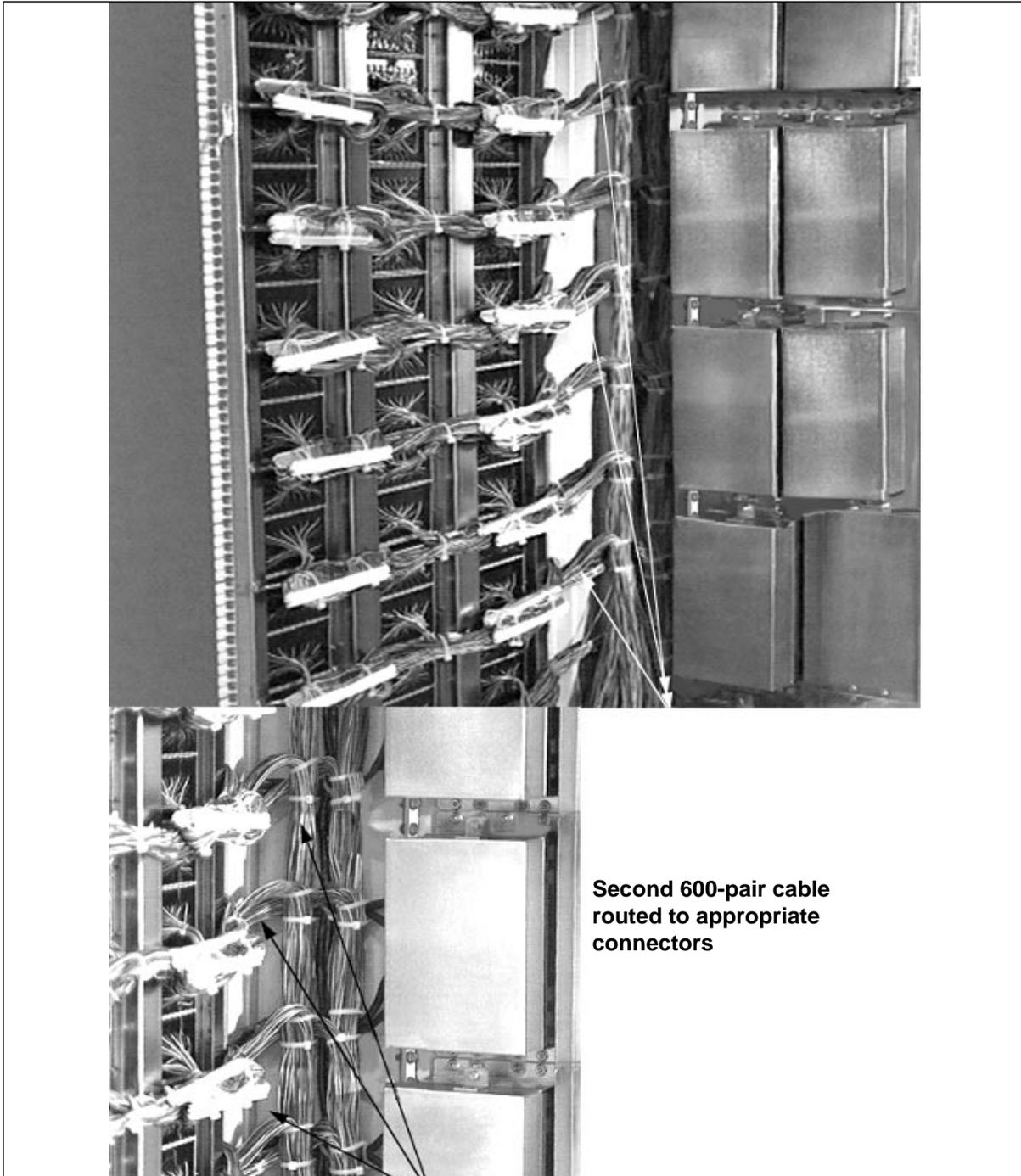
6-32 Routing and terminating the VF cables

Procedure 6-6 (continued)

Connecting the VF cable pairs 1–600 to 710 or 3M MS2 DPM connectors with cross-connect

Figure 6-15

Route the second 600-pair cable to appropriate connectors



—end—

Procedure 6-7

Splicing the binder groups using 710 or 3M MS² DPM connectors

This procedure shows how to splice binder groups for VF cable pairs 1–1200 for installations using 710 or MS² connectors with the cross-connect facility.

The installation steps outlined in this procedure are suggested procedures. Operating companies may complete the steps per their own cross-connect practices.

Reference information for the SPC signal pair assignments and specific connector pin designations is contained in Chapter 13, “Cabinet and equipment wiring and cabling”.

There are two connector options available with the Series 800A binding post cross-connect: 710-SC1-25 (capless female) and 3M MS² 4000D Super-Mini connector.

Connections between 710/3M and VF line protectors are factory installed using 24-gauge wires. Electronic equipment is connected to the protector assembly by connectorized cable assemblies.

Because of the limited space and density of the cable routing, keep cable slack to a minimum. Fuse links should be spliced into the VF pairs outside the cabinet.

The Series 800A cabinet may have 710 or 3M connectors installed on the swing frame but not a combination of both.

Ensure that a QCM2A or equivalent bond clamp(s) is installed on the outside cable (see Chapter 4, “Installing the OSP cables”).

Special tools required

For 710 connectors use the Western Electric 945A Splicing Tool Kit. For 3M connectors use the 4045K Universal Splicing Rig (or equivalent splicing kit for 3M MS² connectors).

—continued—

6-34 Routing and terminating the VF cables

Procedure 6-7 (continued)

Splicing the binder groups using 710 or 3M MS2 DPM connectors

Action

Step	Action
1	Attach the proper splicing tool to the swing frame door. Note: It is recommended that the installer splice the binder groups from the top of the rear wall to the bottom, using the support bars of the swing frame door as support for the splicing tool head.
2	Crimp each binder group to its respective terminal block using the splicing tool. Note: Each binder group should be crimped no longer than the length of wire (approximately 8 inches) between the terminal block and connector on the swing frame door.
3	Move the splicing tool down the swing frame to the next position.
4	Repeat from step 2 for each binder group and connector on columns 1 and 3.
5	Fold the excess wire from each binder group in lengths equal to the width of the connector (approximately 6 inches). Note: This ensures that the least amount of bulk is tied to the cable support bar.
6	Hold the connectors and the folded excess wire in position.
7	Place a tie wrap around the left end of the top connector.
8	Wrap it around the back of the connectors and support frame, around the left end of the bottom connector, and into the tie wrap end.
9	Pull on the tie wrap to secure the connectors and the binder group to the support frame.
10	Secure the right end of each connector. Note: Tie wraps should only be tight enough to hold the bundle secure. If you can not turn the tie wrap around the bundle it is too tight.
11	Repeat steps 5 through 10 for each binder group and connector on Columns 1 and 3.
12	Fold any unused or unterminated binder groups and dress them into the cable form (see Figure 6-16 on page 6-35).
13	Plug the VF cable entry hole with epoxy or equivalent compound when all OSP cable terminations are complete.
14	Remove the connection tool and close the termination compartment door.

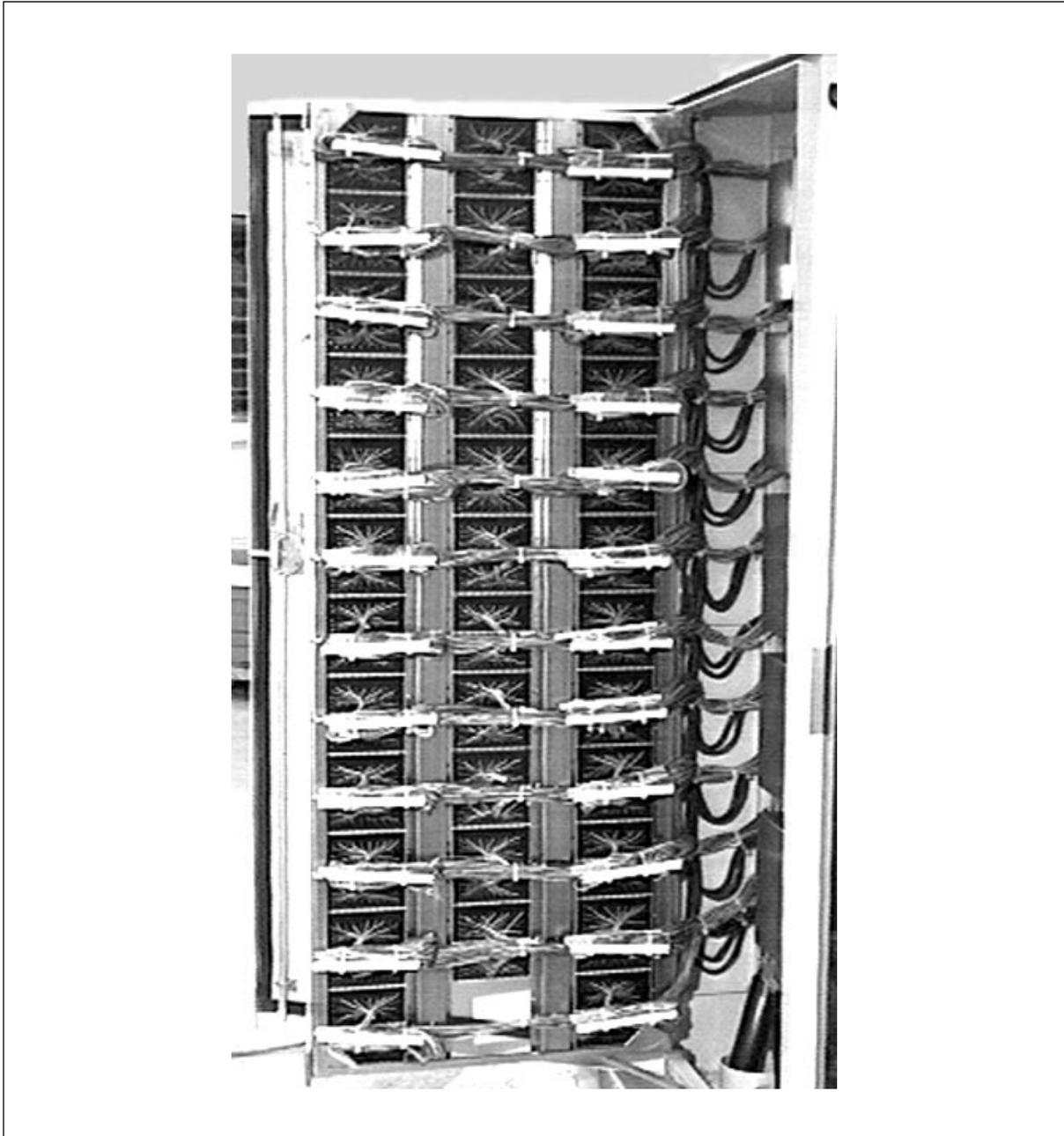
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Procedure 6-7 (continued)

Splicing the binder groups using 710 or 3M MS2 DPM connectors

Figure 6-16

Completed cable terminations for 710 or 3M MS² with cross-connect



—end—

Procedure 6-8

Connecting the outside plant cable pairs to 710 or 3M MS² DPM connectors without cross-connect

The installation steps outlined in this procedure are suggested procedures for routing and terminating VF cables in the Series 800A cabinet without a cross-connect facility. Operating companies may also complete the steps per their own termination practices.

Reference information for the SPC signal pair assignments and specific connector pin designations is contained in Chapter 13, “Cabinet and equipment wiring and cabling”.

Connections between the 710 or 3M-MS² connectors and the VF line protectors are factory installed using 24-gauge wires. Electronic equipment is connected to the protector assembly by connectorized cable assemblies.

Because of the limited space and density of the cable routing, keep cable slack to a minimum.

Fuse links should be spliced into the VF pairs outside the cabinet.

The Series 800A cabinet may have 710 or 3M connectors installed on the swing frame but not a combination of both.

Ensure that a QCM2A or equivalent bond clamp(s) is installed on the outside cable (see Chapter 4, “Installing the OSP cables”).

Special tools required

For 710 connectors use the Western Electric 945A Splicing Tool Kit. For 3M connectors use the 4045K Universal Splicing Rig (or equivalent splicing kit for 3M MS² connectors).

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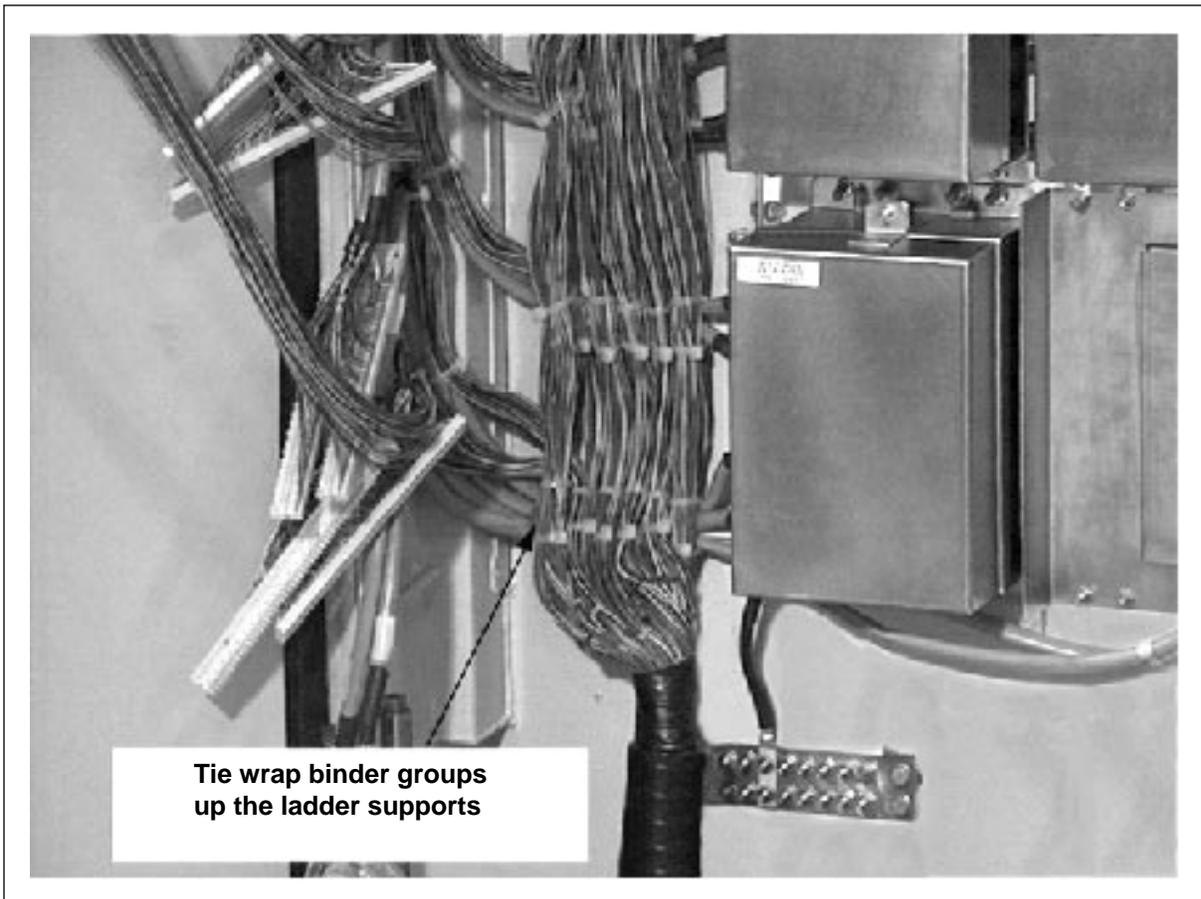
Procedure 6-8 (continued)

Connecting the outside plant cable pairs to 710 or 3M MS2 DPM connectors without cross-connect

Action

Step	Action
1	From the base of the OSP cables, tie wrap each bundle against the left rear wall ladder position (see Figure 6-17).
2	Position the binder groups from the OSP cables in the proper sequence and secure them against the ladder supports.
3	Run each bundle in its proper pair count order from top to bottom, following standard color code assignments.

Figure 6-17
Tie wrap binder groups to the ladder supports



—continued—

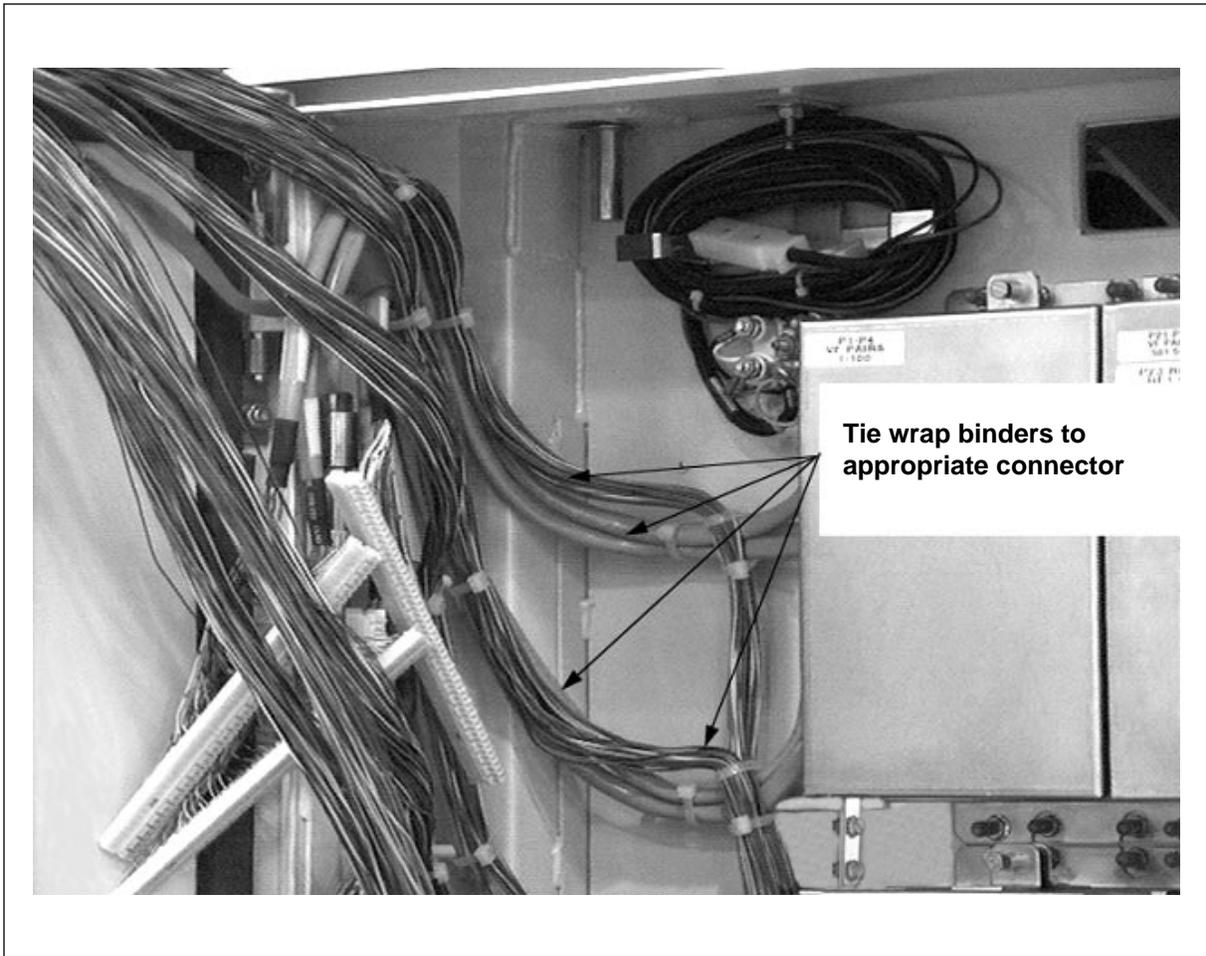
6-38 Routing and terminating the VF cables

Procedure 6-8 (continued)

Connecting the outside plant cable pairs to 710 or 3M MS2 DPM connectors without cross-connect

Step	Action
4	Tie off each binder group with its appropriate connector to the ladder supports. (see Figure 6-18).
5	Wrap the ends with vinyl tape to keep the binder groups organized until you are ready to splice.
6	Attach the splice connection tool.

Figure 6-18
Tie off each binder group to its appropriate connector



—continued—

Procedure 6-8 (continued)

Connecting the outside plant cable pairs to 710 or 3M MS2 DPM connectors without cross-connect

- | Step | Action |
|------|--|
| 7 | <p>Perform the steps shown in Table 6-3 as per the specific type of connectors that you are working with.</p> <p>Note: Leave enough excess length so the connector assemblies can be folded and returned to their original positions.</p> |

Table 6-3
Terminating connector options

If you are connecting	Then perform these steps
3M connectors	<ul style="list-style-type: none"> • Terminate each 25-pair binder group directly onto the corresponding 3M connectors (see Table 6-4). • Go to step 8.
710 connectors to 710 capless connectors	<ul style="list-style-type: none"> • Terminate each 25-pair binder group directly onto the corresponding 710 connectors capless connectors provided (see Table 6-4). • Attach the cap. • Go to step 8.
710 connectors to a bridging connector	<ul style="list-style-type: none"> • Terminate onto a bridge connector and mate with the spliced connector (see Table 6-4). • Fan out pairs. • Go to step 8.

- 8** Tie off the binder group with its proper connector coming from the S800A S/DMS AccessNode copper-distribution shelf to the inside left wall ladder supports.
- 9** Attach each 25-pair binder group to the corresponding ladder position.
- 10** Tie wrap as needed along both left side ladder supports (see Figure 6-19 on page 6-42).
- Note:** When tie wrapping, make sure the pairs are resting on top of the S800A S/DMS AccessNode copper-distribution shelf cables. Keep the pairs off the metal. Take care not to bind the pairs too tight; you should be able to turn the ties once they are wrapped.

—continued—

6-40 Routing and terminating the VF cables

Procedure 6-8 (continued)

Connecting the outside plant cable pairs to 710 or 3M MS2 DPM connectors without cross-connect

Table 6-4 (pair count top to bottom) outlines each binder group and its respective swing frame support bar position.

**Table 6-4
Routing binder groups across the swing frame (pair count top to bottom)**

Support bar	VF line number	Column 1 binder group Distribution Pairs 601–1200	Column 2 SPC cables Feeder Pairs 1–600	Column 3 binder group Distribution Pairs 1–600
1	1–25	White / Blue	1–25	White / Blue
1	26–50	White / Orange	26–50	White / Orange
2	51–75	White / Green	51–75	White / Green
2	76–96	White / Brown	76–100	White / Brown
3	97–121	White / Slate	101–125	White / Slate
3	122–146	Red / Blue	126–150	Red / Blue
4	147–171	Red / Orange	151–175	Red / Orange
4	172–192	Red / Green	176–200	Red / Green
5	193–217	Red / Brown	201–225	Red / Brown
5	218–242	Red / Slate	226–250	Red / Slate
6	243–267	Black / Blue	251–275	Black / Blue
6	368–288	Black / Orange	276–300	Black / Orange
7	289–313	Black / Green	301–325	Black / Green
7	314–338	Black / Brown	326–350	Black / Brown
8	339–363	Black / Slate	351–375	Black / Slate
8	364–384	Yellow / Blue	376–400	Yellow / Blue
9	385–409	Yellow / Orange	401–425	Yellow / Orange
9	410–434	Yellow / Green	426–450	Yellow / Green
10	435–459	Yellow / Brown	451–475	Yellow / Brown
10	460–480	Yellow / Slate	476–500	Yellow / Slate
11	481–505	Violet / Blue	501–525	Violet / Blue
11	506–530	Violet / Orange	526–550	Violet / Orange
12	531–555	Violet / Green	551–575	Violet / Green
12	556–576	Violet / Brown	576–600	Violet / Brown

—continued—

Procedure 6-8 (continued)

Connecting the outside plant cable pairs to 710 or 3M MS2 DPM connectors without cross-connect

Step	Action
11	Arrange cable loops in an orderly manner on the inside left wall ladder supports.
12	Tie wrap spliced connectors to the horizontal ladders.
13	Secure spliced groups to the ladder supports with cable ties (see Figure 6-19 on page 6-42 and Figure 6-20 on page 6-43).
14	Spare, form, and tie wrap any unused pairs for future use (see Figure 6-21 on page 6-44).
15	Plug the VF cable entry holes with epoxy or equivalent compound.
16	Remove the connection tool.
17	Close the termination compartment door.

—continued—

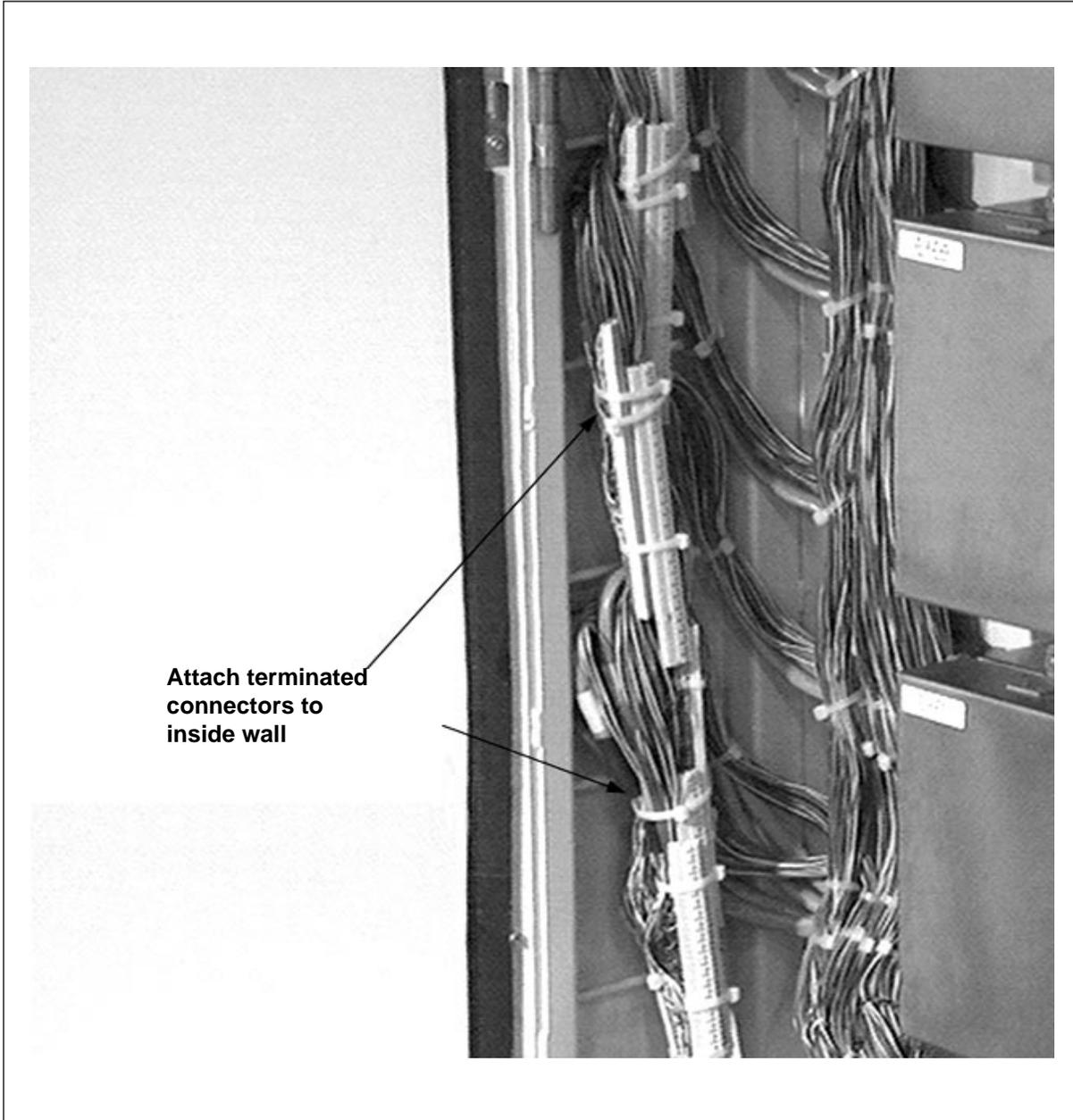
6-42 Routing and terminating the VF cables

Procedure 6-8 (continued)

Connecting the outside plant cable pairs to 710 or 3M MS2 DPM connectors without cross-connect

Figure 6-19

Arrange connectors and binder groups along the inside left ladder supports



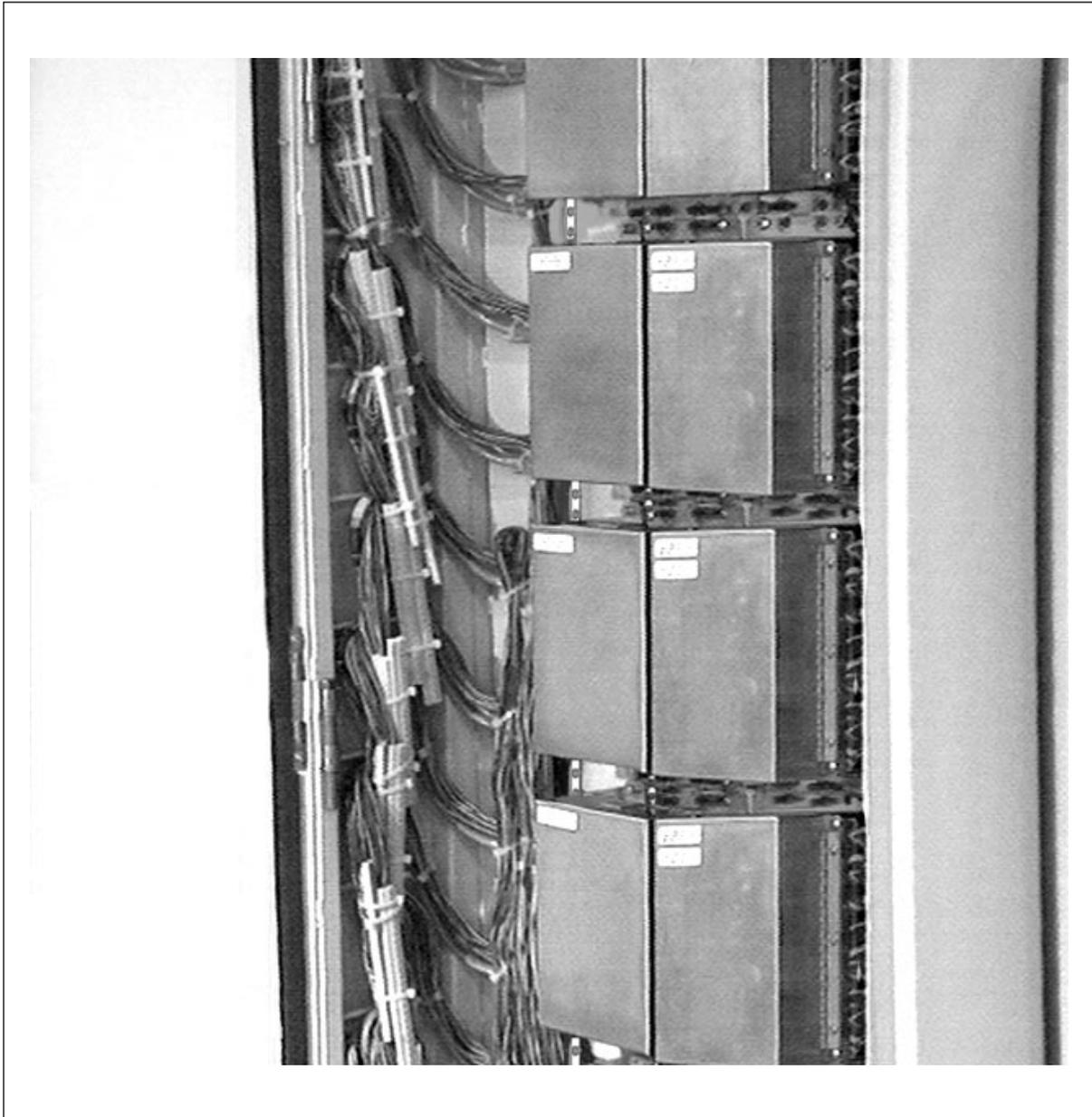
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Procedure 6-8 (continued)

Connecting the outside plant cable pairs to 710 or 3M MS2 DPM connectors without cross-connect

Figure 6-20

Completed cable terminations for 710 and 3M MS² without cross-connect



—continued—

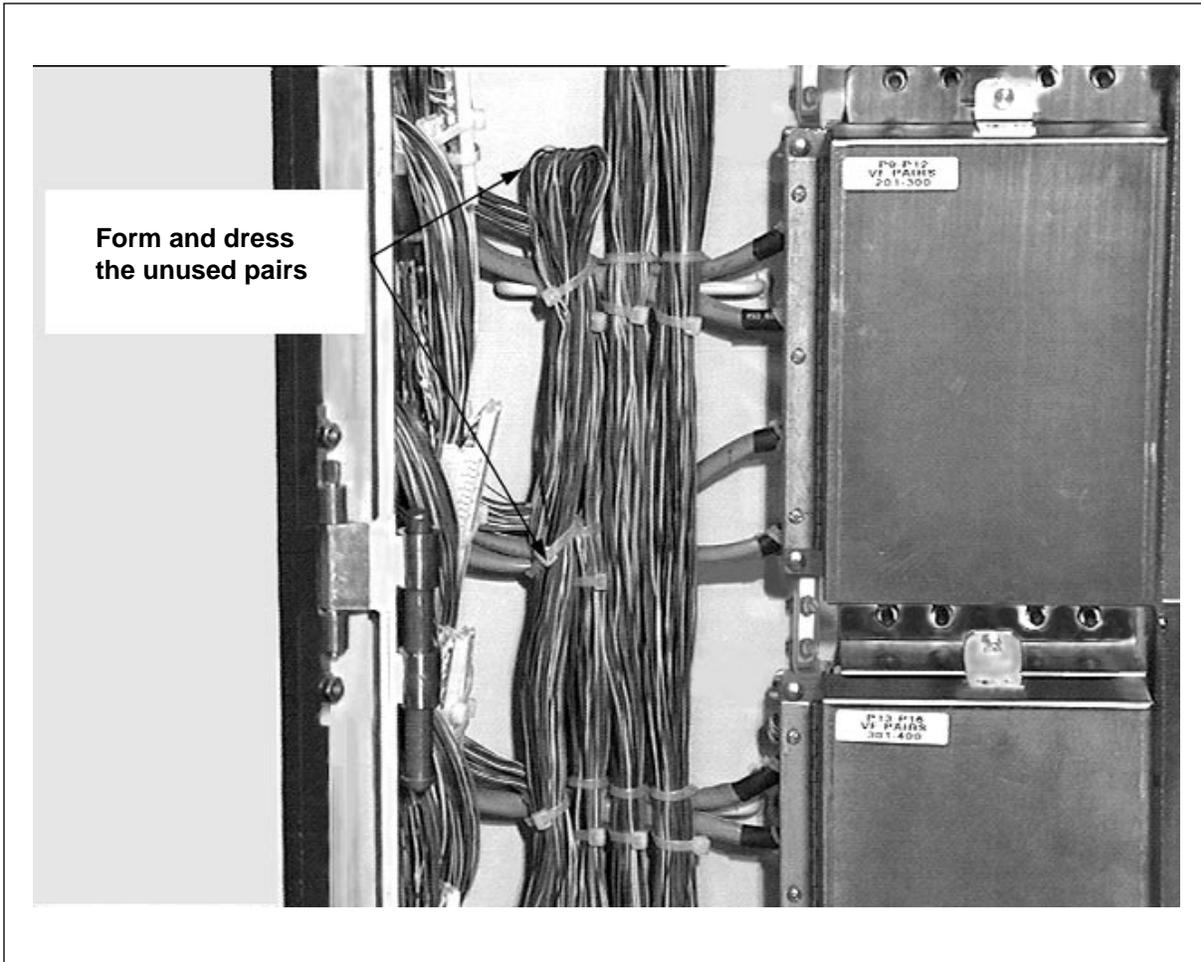
6-44 Routing and terminating the VF cables

Procedure 6-8 (continued)

Connecting the outside plant cable pairs to 710 or 3M MS2 DPM connectors without cross-connect

Figure 6-21

Dress and form the unused pairs



—end—

Routing and splicing the fiber cable

This section provides installation procedures for the routing and splicing of the fiber cables in the Series 800A cabinet.

When the OSP fiber cable is spliced at an external location, you should bond and ground the cable at that location so that only the fiber patch cords enter the cabinet. When the OSP fiber cable is spliced at the internal fiber management unit, the OSP cable enters the cabinet directly and you may bond and ground it in either the termination compartment or at the fiber management system.

How to use this chapter

In the following table, you will find a list of the procedures to route and splice the outside plant fiber cable for the AccessNode S800A Outside Plant cabinet. Perform the procedures in the order listed. If you cannot successfully complete these procedures, contact your next level of support.

Note: The installation steps outlined in this chapter are suggested procedures. Operating companies may complete the steps using their own fiber management practices.

Chapter task list

Task	See
Routing the OSP fiber cable directly into the cabinet to an internal fiber management system for bonding and grounding	Procedure 7-1 on page 7-5
Routing the OSP fibers into the cabinet to the fiber management system with the cable bonded and grounded in the termination compartment	Procedure 7-2 on page 7-15
Routing the fiber patchcords from the ABM to the fiber management system in the cabinet	Procedure 7-3 on page 7-20
Routing the fiber patchcords or pigtails directly to the ABM when the fiber management system is located external to the cabinet	Procedure 7-4 on page 7-32

Prerequisites for installation

Chapter 4, “Installing the OSP cables” lists the procedures for pulling, butting, fanning, stripping, bonding and grounding the OSP fiber cable in the termination compartment. Ensure that a QCM2A or equivalent bond clamp(s) is installed on the outside cable.

Bonding and grounding may be done at the fiber management unit depending on the type of unit you are using. Reference the manufacturers documentation for bonding and grounding information.

The prerequisites for routing and splicing the fiber cabling include:

- The cabinet has been mounted on the selected concrete pad as defined in Chapters 1 through 6 of this practice.
- All hardware and materials are available and have been checked for completeness and readiness for the installation.
- All the required drawings, local installation instructions, job specifications, and other documentation are available and ready for use.
- Fiber cable (either OSP cable or fiber patch cords) have been pulled into the termination compartment as described in Chapter 4, “Installing the OSP cables”.

Precautions

The following safety precautions should be observed at all times during the fiber cable routing and splicing procedures:

- No equipment should be installed until the cabinet is firmly secured to its mounting pad, as described in this procedure.
- Do not open the front or rear doors unless the cabinet is firmly secured to the mounting pad.
- Observe all NEC and local codes for electrical wiring.



CAUTION

Local wiring codes

The procedures outlined are recommended guidelines. Follow all local codes for wiring procedures.

- Wear safety glasses at all times when installing optical fibers. Use tweezers and the sticky side of a piece of vinyl tape to handle loose fiber ends.
- Handle optical fibers carefully and always position them securely when splicing. Be careful during installation to avoid contact with glass chips. Always use tissue paper to wipe small pieces of glass fiber from your hands before touching the eye area.
- Protect single fiber optical connectors with dust caps at all times.
- Place any discarded fiber cuttings in a plastic bottle specifically used for disposal.
- Do not damage the fibers by exceeding the minimum bend radius for fibers, pigtailed or patch cords.



CAUTION

Risk of damage to fiber optic patchcords

Handle the fibers with extreme care. Never bend the cables into a curve with a radius smaller than 3.0 inches (76 mm). Tighten connections to the optical units finger tight only.

Cable entry

The S800A cabinet is constructed with cable conduit entry ports located at the bottom of the end compartments of the cabinet.

Termination compartment

Table 7-1 shows where the fiber cabling has been pulled into the termination compartment (see Chapter 4, “Installing the OSP cables”) and how much slack has been pulled for cable routing.

Table 7-1
OSP cable entry locations and lengths

When you pull cable for	Into the termination compartment conduit opening at this location	Then leave this amount of cable for routing
VF cable pairs 1–600	far left	10 ft (3.1 m)
VF cable pairs 601–1200	middle left	12 ft (3.7 m)
VF or miscellaneous pairs	middle right	25 ft (7.6 m)
T1 distribution or maintenance pairs	middle right	5 ft (1.5 m)
Fiber	far right	25 ft (7.6 m)

Procedure 7-1

Routing the OSP fiber cable directly to the FPP

This procedure explains how to route fiber optic OSP cables into the S800A cabinet when the cable is run directly into the cabinet and spliced, bonded and grounded at a fiber management system such as an ADC fiber patch panel.

Use these procedures when routing OSP fiber into the S800A cabinet.

Table 7-2 shows where to find information regarding fiber routing for:

- fibers to the fiber patch panel (FPP) from the OSP cable that is bonded and grounded in the termination compartment
- fiber patch cords to the FPP from locations external to the S800A cabinet, such as from a customer owned manhole
- fiber patch cords to the ABM from locations external to the S800A cabinet, such as from a customer owned manhole

Table 7-2
Additional fiber routing and splicing information

If you are	Additional information can be found in
Routing the OSP fibers into the cabinet to the fiber management system with the cable bonded and grounded in the termination compartment	Procedure 7-2 on page 7-15
Routing the fiber patchcords from the ABM to the fiber management system in the cabinet	Procedure 7-3 on page 7-20
Routing the fiber patchcords or pigtailed directly to the ABM when the fiber management system is located external to the cabinet	Procedure 7-4 on page 7-32

Prerequisites for installation

The prerequisites for routing and splicing the fiber cabling include:

- The cabinet has been mounted on the selected concrete pad as defined in Chapters 1 through 6 of this practice.
- All hardware and materials are available and have been checked for completeness and readiness for the installation.
- Fiber cable has been pulled into the termination compartment as described in Chapter 4, “Installing the OSP cables”.

—continued—

Procedure 7-1 (continued)

Routing the OSP fiber cable directly to the FPP

Precautions

Read the following cautions before beginning the procedure:



CAUTION

Risk of damage to fiber optic patchcords

Handle the fibers with extreme care. Never bend the cables into a curve with a radius smaller than 3.0 inches (76 mm). Tighten connections to the optical units finger tight only.



DANGER

Laser radiation hazard

Avoid direct exposure to fiber or optical connector ends where the laser signal can be reached. Laser radiation is present and can cause serious eye damage.

Get immediate medical attention if a glass chip becomes lodged in the eye area.



CAUTION

Clean all optical connectors

Dust can adversely affect optical connector performance. Clean all connectors before inserting the connectors into the mating sleeves. Use clean dust caps when connectors are not in use.

Special tools required

There are no special tools required for completing this procedure. Use splicing tools normally used for the type of splicing method for terminating fiber cables using local specification requirements.

Materials required

One split tubing, approximately 30 ft (9.12 m) is the required material.

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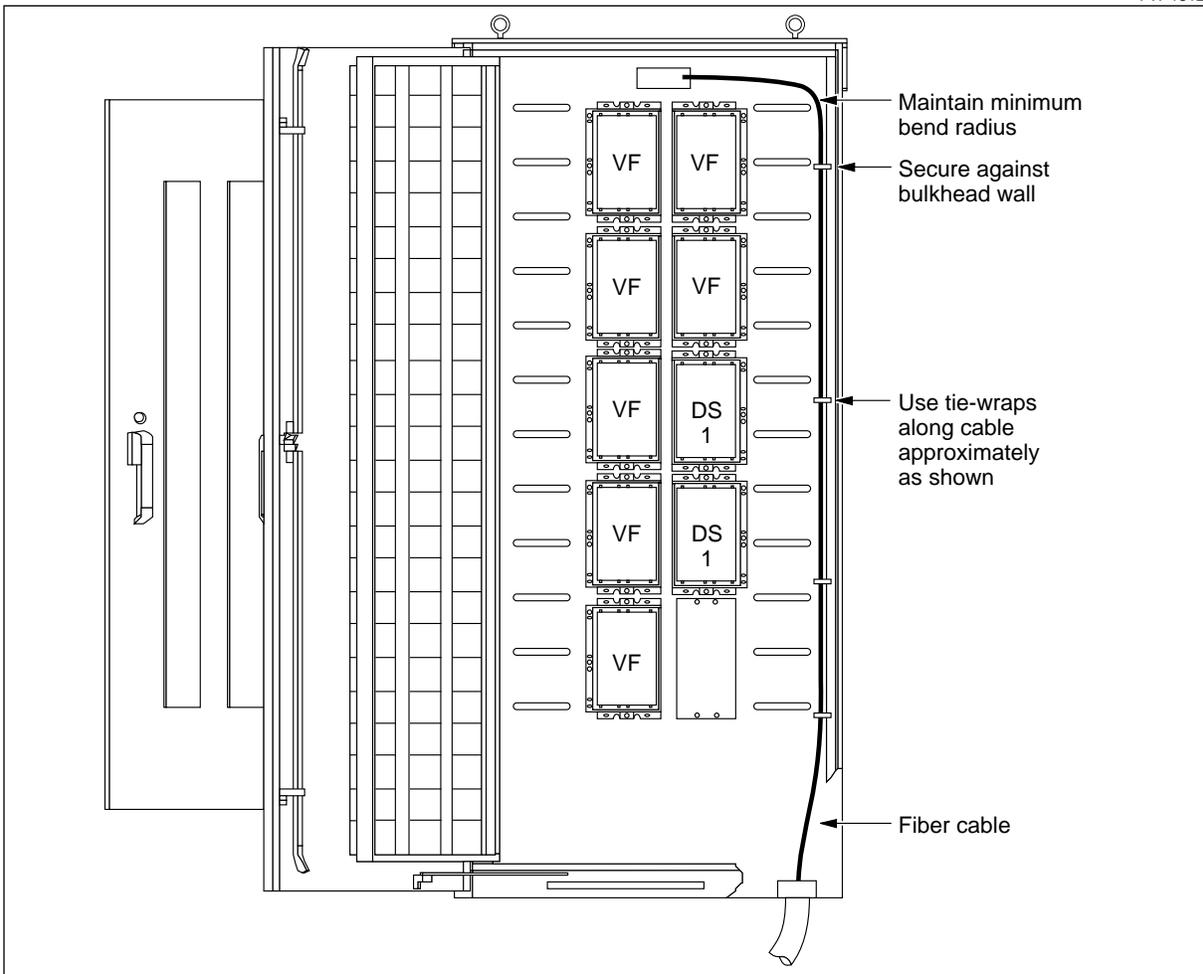
Procedure 7-1 (continued)
Routing the OSP fiber cable directly to the FPP

Action

Step	Action
1	Route the fiber cable through the hole at the top of the termination compartment (see Figure 7-1).
2	Secure the cable with tie wraps to the termination compartment cable ladder on the right-hand side. Note: Maintain at least the minimum bend radius (3.0 inches/76 mm) for the fiber cable.

Figure 7-1
Routing of fiber cable to interior cabinet

FW-15126



—continued—

7-8 Routing and splicing the fiber cable

Procedure 7-1 (continued)

Routing the OSP fiber cable directly to the FPP

Step	Action
3	<p>Route cables across the ceiling of the cabinet on the rear side of the air baffle according to the type of roof assembly (see Figure 7-2 or Figure 7-3).</p> <p>Note 1: For the heat exchanger roof, route the fiber inside the V-baffle enclosure (see Figure 7-2 on page 7-9).</p> <p>Note 2: The air induction roof has a cable hooks for all cable routing (see Figure 7-3 on page 7-9).</p>
4	<p>Tie wrap the fiber cable to the cabinet ceiling according to the type of roof assembly.</p>

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Procedure 7-1 (continued)
Routing the OSP fiber cable directly to the FPP

Figure 7-2
Tie wrap the fiber cable to the ceiling of the heat exchanger roof assembly

FW-15127

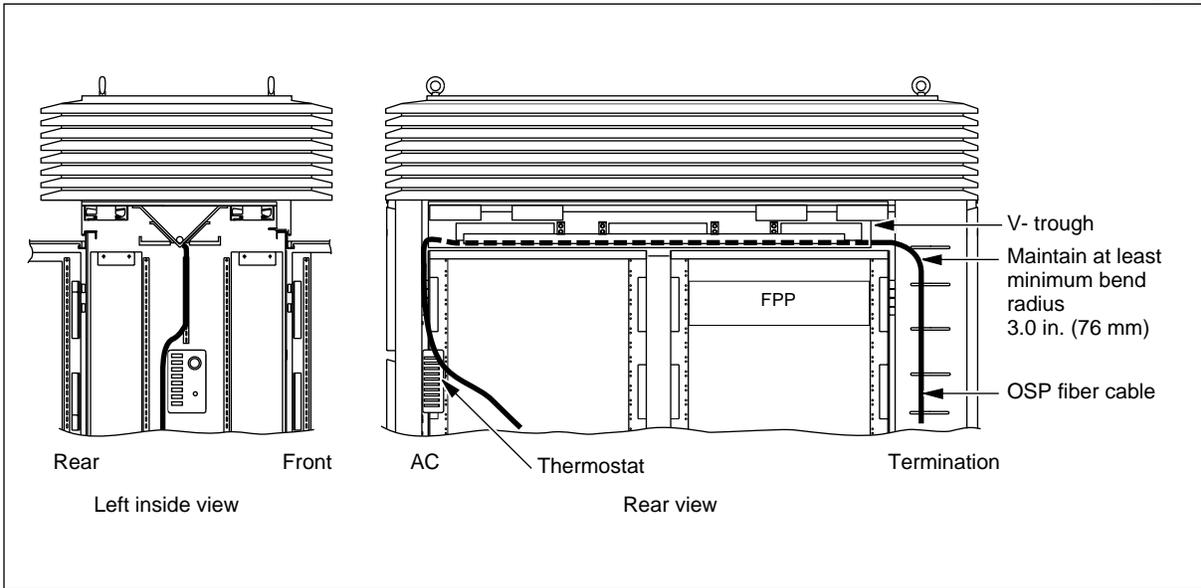
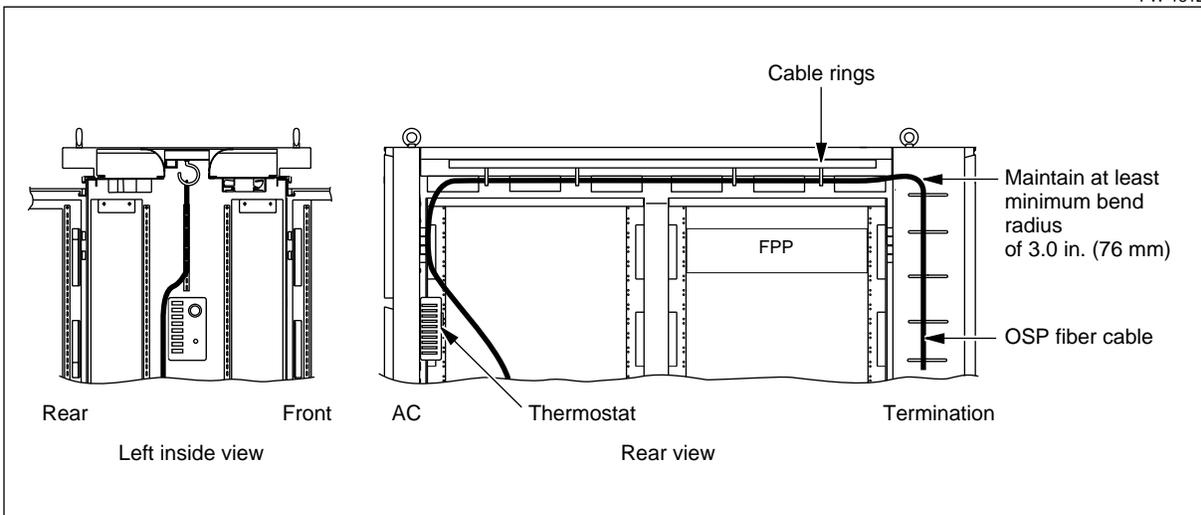


Figure 7-3
Tie wrap the fiber cable to the ceiling of the air induction roof assembly

FW-15128



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7-10 Routing and splicing the fiber cable

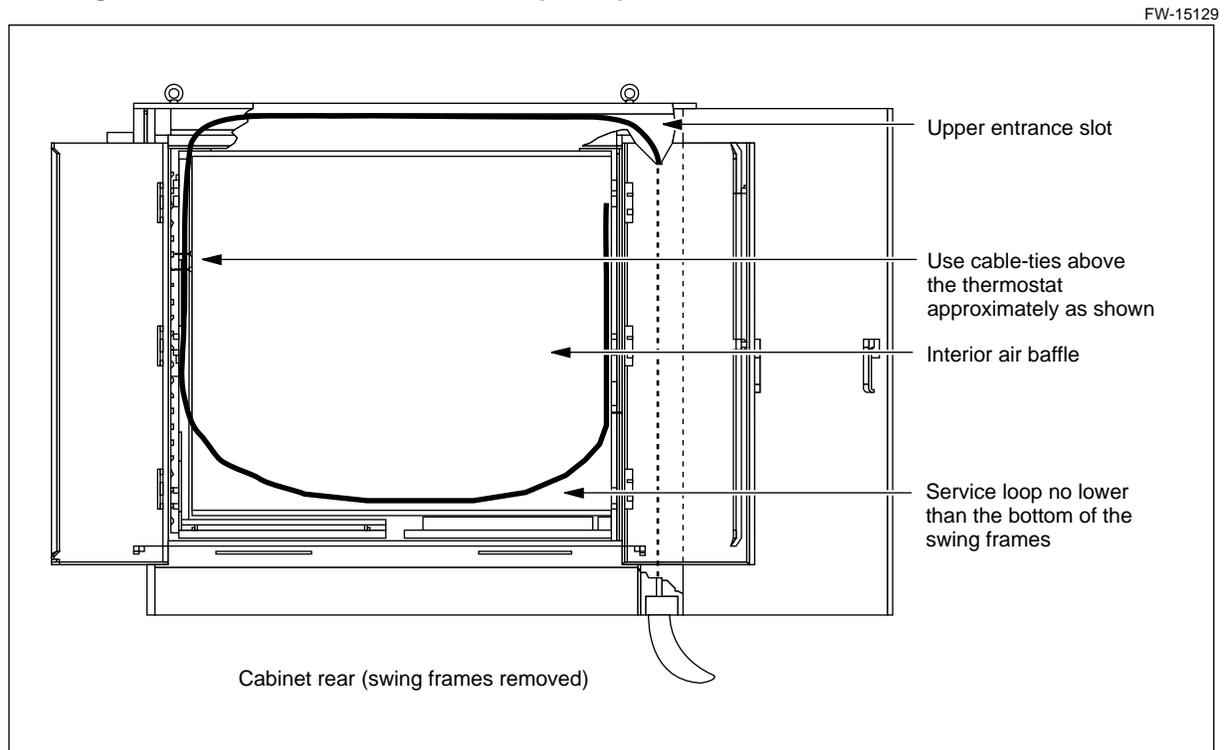
Procedure 7-1 (continued)

Routing the OSP fiber cable directly to the FPP

Step	Action
5	Loop the fiber down the inside wall of the AC compartment on the rear side of the baffle to the bottom of the wall.
6	Route the fiber across the top of the batteries and up the inside wall of the termination compartment (see Figure 7-4).

Figure 7-4

Routing of fiber cable to fiber distribution/patch panel rear view



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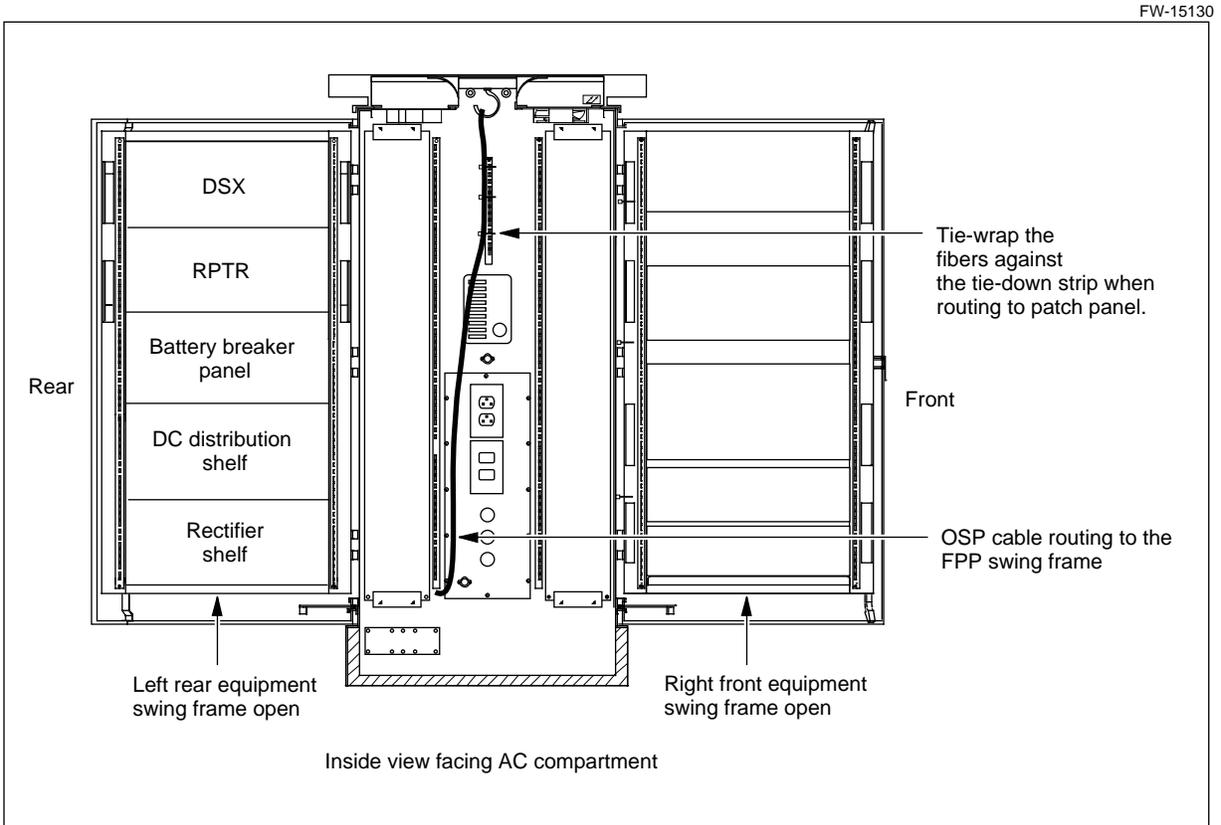
Procedure 7-1 (continued)

Routing the OSP fiber cable directly to the FPP

Step	Action
7	Secure the cable with tie wraps to the cable tie strips above the thermostat (see Figure 7-5) on the inside wall of the AC compartment.
8	Secure the cable with tie wraps to the middle of the cable tie strip on the inner side of the right rear swing frame (see Figure 7-6 on page 7-12).

Note: Ensure that the drop loop of the cable is no lower than the bottom of the swing frames. This enables the swing frames to be opened without snagging the cable on the batteries or the bottom of the door opening (see Figure 7-4 on page 7-10).

Figure 7-5
Tie wrap the fiber cable above the thermostat



—continued—

7-12 Routing and splicing the fiber cable

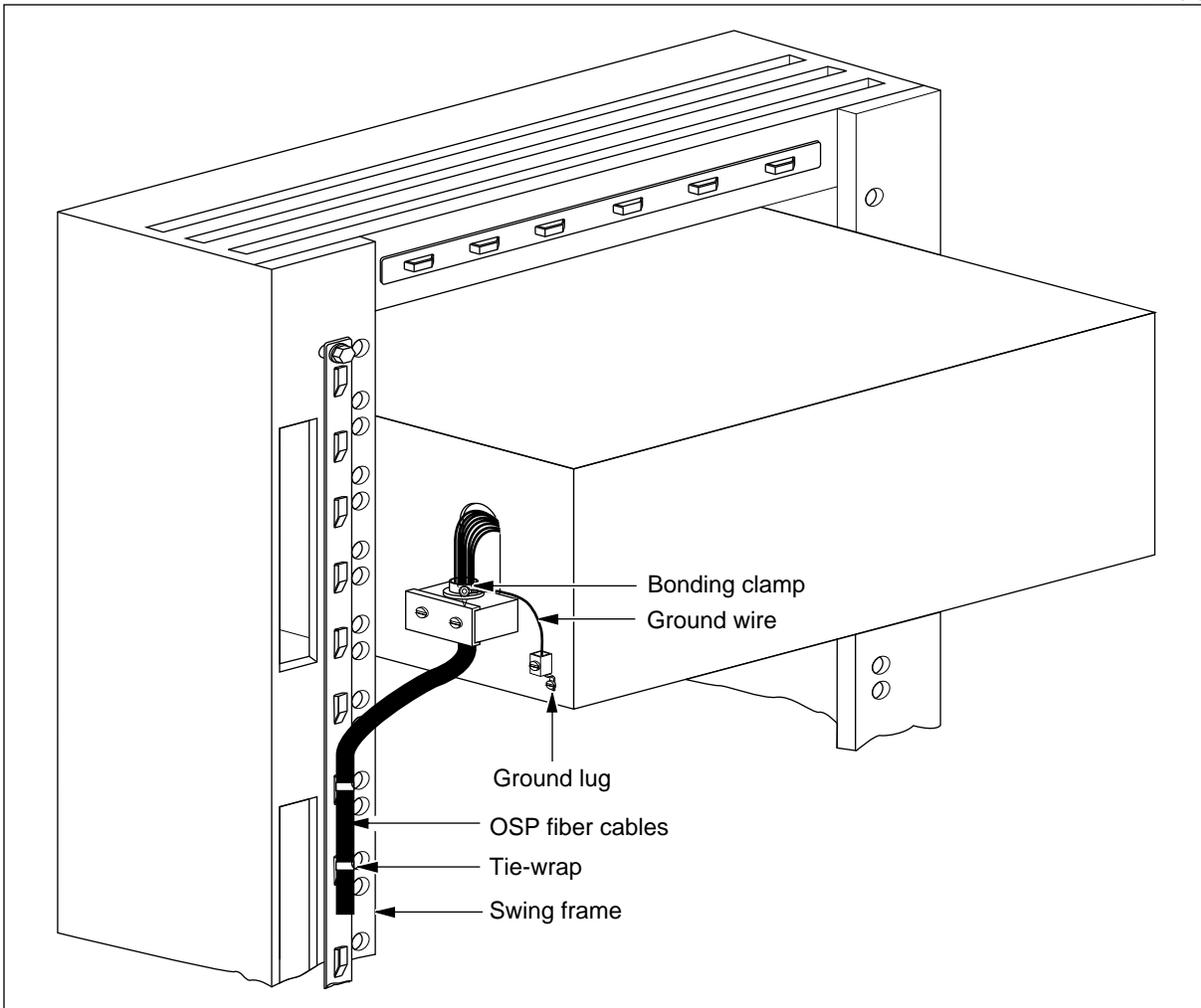
Procedure 7-1 (continued)

Routing the OSP fiber cable directly to the FPP

Step	Action
9	Measure the length of the fiber cable to establish the point at which the cable is to be butted. Note: The cable butt should be 1/2-inch (1.27 cm) above the bonding and grounding bracket mounted on the FPP (see Figure 7-6).
10	Butt the fiber cable.
11	Protect the fibers with buffer tubing as specified by local practices or job specifications.

Figure 7-6
Butt and ground the fiber cable at the FPP (left rear view)

FW-15131



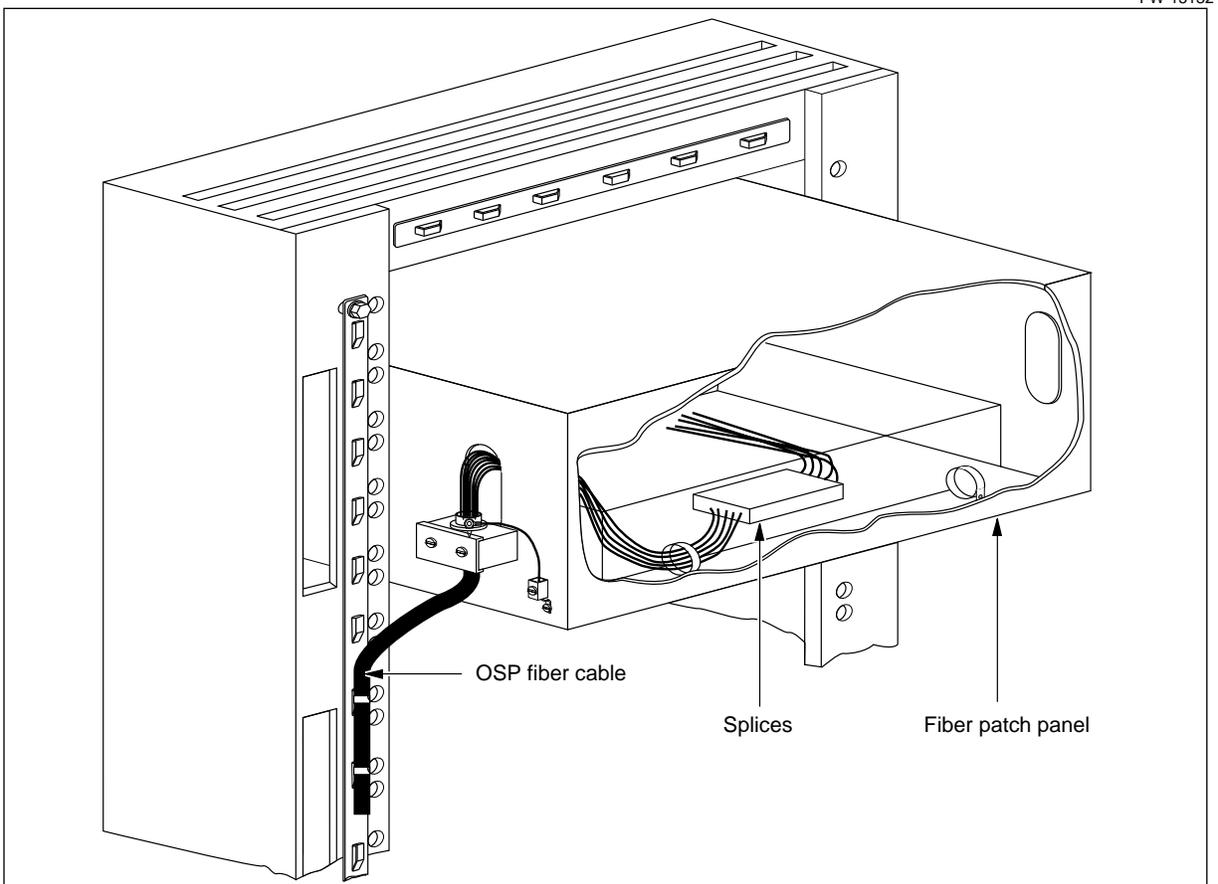
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Procedure 7-1 (continued)

Routing the OSP fiber cable directly to the FPP

Step	Action
12	Tie wrap the cable to the strip on the inner side of the swing frame to within 6 inches (15.4 cm) of the bonding and grounding bracket.
13	Form the ground lead into the bonding and grounding bracket (see Figure 7-6 on page 7-12).
14	Tighten all of the bracket connections to secure the cable and ground lead.
15	Route the buffer tubing with the fibers inside into the FPP at the fiber entry hole on the side of the panel (see Figure 7-6 on page 7-12).
	Note: Maintain at least the minimum bend radius (3.0 inches/76 mm).
16	Secure the buffer tubing with the fibers inside in the FPP at the cable tie strap located in the inside right rear of the FPP (see Figure 7-7).

Figure 7-7
Fiber cable tie strap in the FPP



—continued—

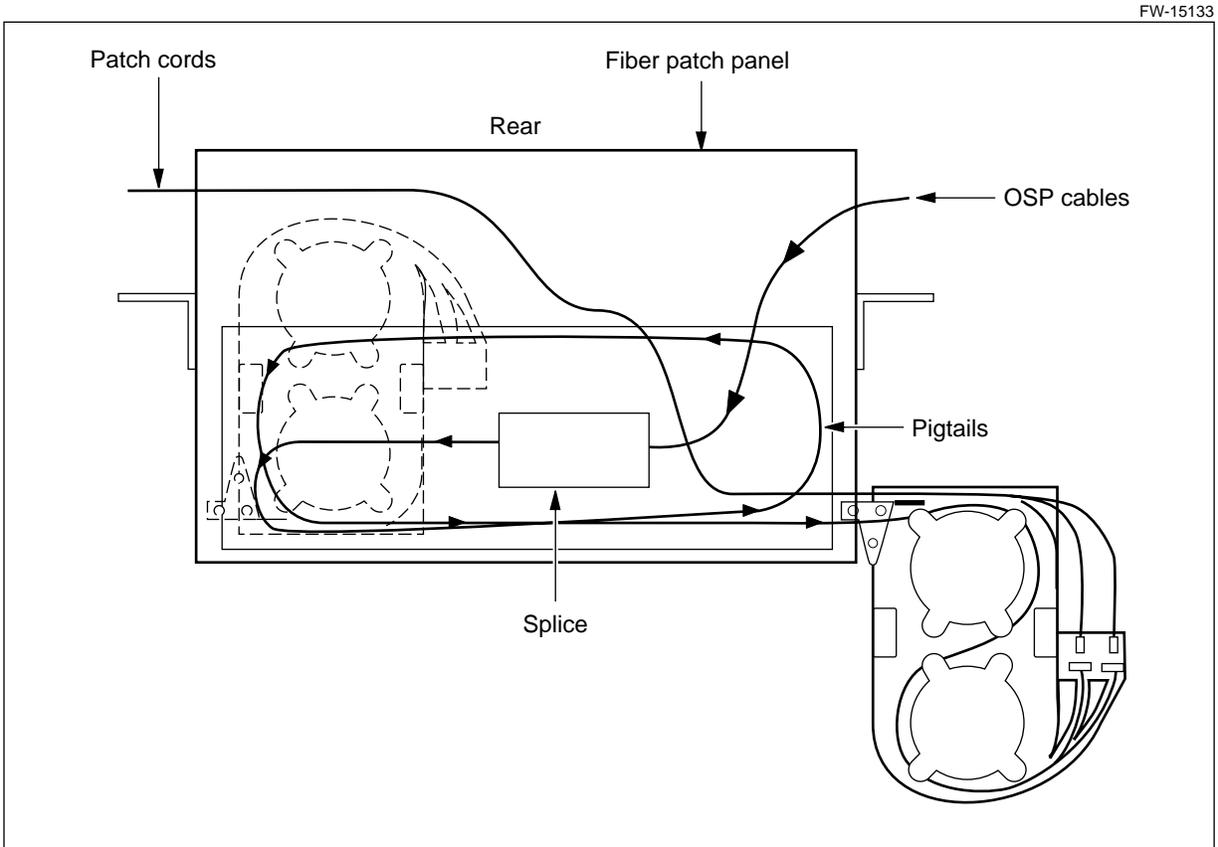
7-14 Routing and splicing the fiber cable

Procedure 7-1 (continued)

Routing the OSP fiber cable directly to the FPP

Step	Action
17	Splice the fiber pigtails to the OSP fiber in the FPP using the splicing methods dictated by job specifications or by local splicing practices. Note: Ensure that the pigtails are equipped with the proper connectors for the fiber management system you are using.
18	Form the pigtails in the FPP as shown in Figure 7-8. Note: Form the pigtails in the fiber management system as per the manufacturer's recommendations if you are using a system other than the FPP.
19	Connect the pigtail connectors to the FPP.
20	Plug the fiber cable entry hole with epoxy or equivalent compound when all OSP cable terminations are complete. Be sure to close the termination compartment door.

Figure 7-8
Pigtail routing in the FPP



FW-15133

—end—

Procedure 7-2

Routing the OSP fibers in split flex tubing to the FPP

This procedure explains how to route the fiber optic OSP fibers protected with split flex tubing into the S800A cabinet when the cable is bonded and grounded in the termination compartment and spliced at a fiber management system such as an ADC fiber patch panel (FPP).

Table 7-3 shows where to find information regarding fiber routing for:

- fibers to the FPP from the OSP cable that is bonded and grounded in the termination compartment
- fiber patch cords to the FPP from locations external to the S800A cabinet such as a customer owned manhole
- fiber patch cords to the ABM from locations external to the S800A cabinet such as a customer owned manhole

Table 7-3
Additional fiber routing and splicing information

If you are	Additional information can be found in
Routing the OSP fiber cable directly into the cabinet to an internal fiber management system such as an ADC fiber patch panel for bonding and grounding	Procedure 7-1 on page 7-5
Routing the fiber patchcords from the ABM to the fiber management system in the cabinet	Procedure 7-3 on page 7-20
Routing the fiber patchcords or pigtails directly to the ABM when the fiber management system is located external to the cabinet	Procedure 7-4 on page 7-32

—continued—

Procedure 7-2 (continued)

Routing the OSP fibers in split flex tubing to the FPP

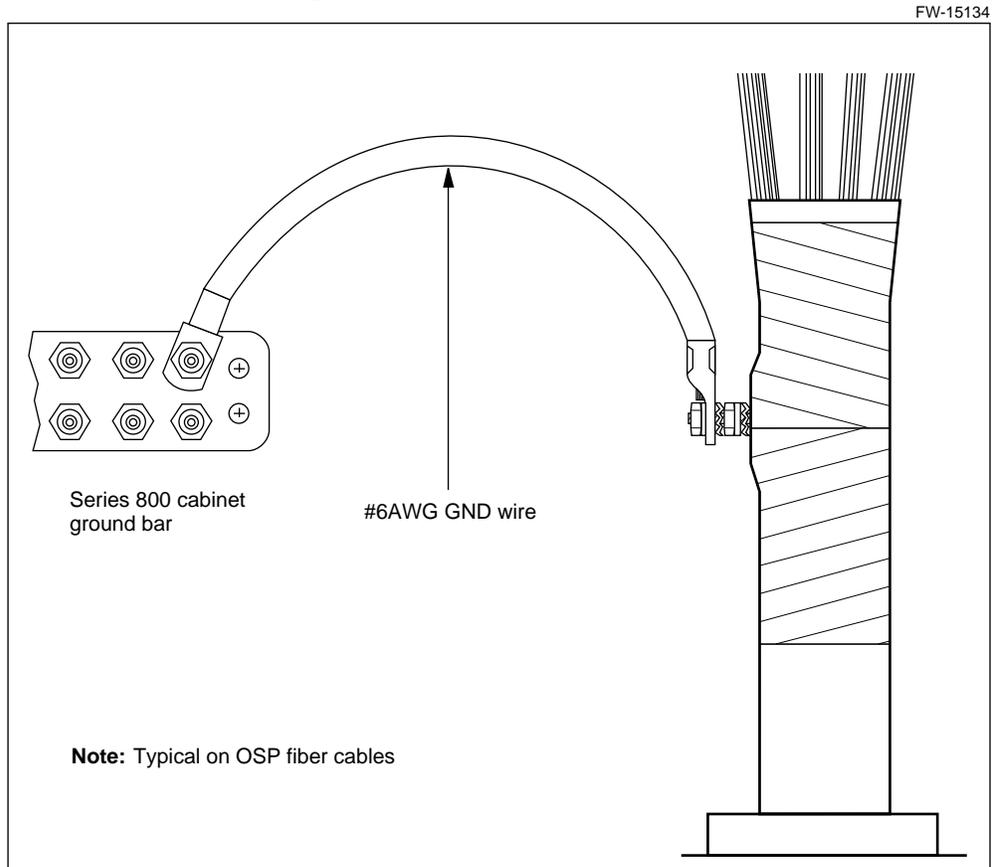
Prerequisites for installation

The prerequisites for routing and splicing the fiber cabling include:

- The cabinet has been mounted on the selected concrete pad as defined in Chapters 1 through 6 of this practice.
- All hardware and materials are available and have been checked for completeness and readiness for the installation.
- All the required drawings, local installation instructions, job specifications, and other documentation are available and ready for use.
- Fiber cable has been pulled into the termination compartment as described in Chapter 4, “Installing the OSP cables”.
- The fiber cable has been bonded and grounded (see Figure 7-9) in the termination compartment as defined in Chapter 4, “Installing the OSP cables”.

Figure 7-9

Fiber cable bonded and grounded in the termination compartment



—continued—

Procedure 7-2 (continued)

Routing the OSP fibers in split flex tubing to the FPP

Precautions

Read the following cautions before beginning the procedure:



CAUTION

Risk of damage to fiber optic patchcords

Handle the fibers with extreme care. Never bend the cables into a curve with a radius smaller than 3.0 inches (76 mm). Tighten connections to the optical units finger tight only.



DANGER

Laser radiation hazard

Avoid direct exposure to fiber or optical connector ends where the laser signal can be reached. Laser radiation is present and can cause serious eye damage.

Get immediate medical attention if a glass chip becomes lodged in the eye area.



CAUTION

Clean all optical connectors

Dust can adversely affect optical connector performance. Clean all connectors before inserting the connectors into the mating sleeves. Use clean dust caps when connectors are not in use.

Special tools required

There are no special tools required for completing this procedure. Use splicing tools normally used for the type of splicing method for terminating fiber cables using local specification requirements.

Materials required

- split flex tubing, approximately 30 ft (9.12 m)
- fiber pigtailed as listed in the job specifications

—continued—

7-18 Routing and splicing the fiber cable

Procedure 7-2 (continued)

Routing the OSP fibers in split flex tubing to the FPP

Action

Step	Action
1	Install split flex tubing around the length of the OSP fibers from the bonding and grounding point in the termination compartment.
2	Route the split flex tubing with the OSP fibers inside into the cabinet through the hole at the top of the termination compartment (see Figure 7-1 on page 7-7).
3	Secure the tubing with tie wraps to the termination compartment cable ladder on the right-hand side.
4	Route the tubing into the cabinet through the cable entry hole at the top of the termination compartment. Note: Maintain at least the minimum bend radius (3.0 inches/76 mm) for the fiber pigtailed or patch cords installed.
5	Route tubing across the ceiling of the cabinet on the rear side of the air baffle.
6	Tie wrap the tubing to the cabinet ceiling as per the type of roof assembly. Note 1: For the heat exchanger roof, route the tubing inside the V-baffle enclosure (see Figure 7-2 on page 7-9). Note 2: The air induction roof has a dedicated conduit for tubing routing (see Figure 7-3 on page 7-9).
7	Loop the fiber down the inside wall of the AC compartment on the rear side of the baffle to the bottom of the wall across the top of the batteries and up the inside wall of the termination compartment (see Figure 7-4 on page 7-10).
8	Secure the tubing with tie wraps to the cable tie strips on the wall above the thermostat (see Figure 7-5 on page 7-11).
9	Secure the tubing with tie wraps to the middle of the cable tie strip on the right rear swing frame. Note: Ensure that the drop loop of the tubing is no lower than the bottom of the swing frames. This enables the swing frames to be opened without snagging the tubing on the batteries or the bottom of the door opening (see Figure 7-4 on page 7-10).

—continued—

Procedure 7-2 (continued)

Routing the OSP fibers in split flex tubing to the FPP

Step	Action
10	Measure the length of the tubing to establish the point at which the tubing is to be butted. Note: The tubing butt should be 1/2-inch (1.27 cm) above the bonding and grounding bracket mounted on the FPP (see Figure 7-6 on page 7-12).
11	Butt the tubing. Note: Ensure that you do not cut the fibers inside the tubing.
12	Tie wrap the cable to the swing frame to within 6 inches (15.4 cm) of the bonding and grounding bracket on the FPP.
13	Secure the tubing to the grounding and bonding bracket on the FPP.
14	Tighten the bracket connections to secure the cable.
15	Route the protected OSP fibers into the FPP at the fiber entry hole on the side of the panel (see Figure 7-6 on page 7-12). Note: Maintain at least the minimum bend radius (3.0 inches/76 mm) for the fiber pigtails or patch cords installed.
16	Secure the protected fibers in the FPP at the cable tie strap located in the interior right rear of the panel (see Figure 7-7 on page 7-13).
17	Splice the fiber pigtails to the OSP fiber in the FPP using the splicing methods dictated by job specifications or by local splicing practices. Note: Ensure that the pigtails are equipped with the proper connectors for the fiber management system you are using.
18	Form the pigtails in the FPP as shown in Figure 7-8 on page 7-14. Note: Form the pigtails in the fiber management system as per the manufacturer's recommendations if you are using a system other than the FPP.
19	Connect the pigtail connectors to the FPP.
20	Plug the fiber cable entry hole with epoxy or equivalent compound when all OSP cable terminations are complete. Be sure to close the termination compartment door.

—end—

Procedure 7-3 Routing the fiber patch cords from the ABM to the FPP

This procedure explains how to route the protected fiber optic patch cords from the Access Bandwidth Manager (ABM) shelf to the fiber management system such as an ADC fiber patch panel (FPP) in the S800A cabinet.

Table 7-4 shows where to find information regarding fiber routing for:

- fibers to the FPP from the OSP cable that is bonded and grounded in the termination compartment
- fiber patch cords to the FPP from locations external to the S800A cabinet such as a customer owned manhole
- fiber patch cords to the ABM from locations external to the S800A cabinet such as a customer owned manhole

Table 7-4
Additional fiber routing and splicing information

If you are	Additional information can be found in
Routing the OSP fiber cable directly into the cabinet to an internal fiber management system such as an ADC fiber patch panel for bonding and grounding	Procedure 7-1 on page 7-5
Routing the OSP fibers into the cabinet to the fiber management system with the cable bonded and grounded in the termination compartment	Procedure 7-2 on page 7-15
Routing the fiber patchcords or pigtails directly to the ABM when the fiber management system is located external to the cabinet	Procedure 7-4 on page 7-32

—continued—

Procedure 7-3 (continued)

Routing the fiber patch cords from the ABM to the FPP

Prerequisites for installation

The prerequisites for routing the fiber patch cords include:

- The cabinet has been mounted on the selected concrete pad as defined in Chapters 1 through 6 of this practice.
- All hardware and materials are available and have been checked for completeness and readiness for the installation.
- All the required drawings, local installation instructions, job specifications, and other documentation are available and ready for use.
- A fiber management system such as an ADC fiber patch panel has been installed in the top of the right rear swing frame.

Precautions

Read the following cautions before beginning the procedure:



CAUTION

Risk of damage to fiber optic patchcords

Handle the fibers with extreme care. Never bend the cables into a curve with a radius smaller than 3.0 inches (76 mm). Tighten connections to the optical units finger tight only.



DANGER

Laser radiation hazard

Avoid direct exposure to fiber or optical connector ends where the laser signal can be reached. Laser radiation is present and can cause serious eye damage.

Get immediate medical attention if a glass chip becomes lodged in the eye area.



CAUTION

Clean all optical connectors

Dust can adversely affect optical connector performance. Clean all connectors before inserting the connectors into the mating sleeves. Use clean dust caps when connectors are not in use.

—continued—

 Procedure 7-3 (continued)

Routing the OSP fibers in split flex tubing to the FPP

Special tools required

There are no special tools required for completing this procedure.

Materials required

- spiral wrap tubing (R0116394), approximately 30 feet (9.12 m)
- fiber patch cords (see Table 7-5).

Table 7-5 lists the ordering codes for optical patch cords.

Table 7-5
Optical patch cords

PEC	Length (meters)	Length (feet)	Connector type
Patch cords			
NT7E46AA	5	16.4	Biconic-biconic
NT7E46BA	5	16.4	FC-FC
NT7E46CA	5	16.4	ST-ST
Patch cords with miniature optical attenuators			
NT7E47AA	5	16.4	Biconic-biconic
NT7E47BA	5	16.4	FC-FC
NT7E47CA	5	16.4	ST-ST

Note: Ensure that the type of connector on the patchcord is compatible with the type of connectors on the OC-3 or OC-12 card in the ABM shelf and with the type of connectors in the FPP.

—continued—

Procedure 7-3 (continued)

Routing the OSP fibers in split flex tubing to the FPP

Action

Step	Action
1	Label each end of the optical patch cords with the following information: <ul style="list-style-type: none">• the slot number in the ABM shelf for the intended OC-3 or OC-12 optical interface card• the direction of signal, Tx (transmit) or Rx (receive)
2	Encase the fiber patch cords in protective spiral wrap tubing.
3	Access the rear of the ABM shelf opening the ABM shelf swing frame.
4	Route the protective tubing with the patch cords inside through the cabling cutout on the hinge side of the rear of the swing frame to the front of the ABM shelf as shown in Figure 7-10 on page 7-24.

—continued—

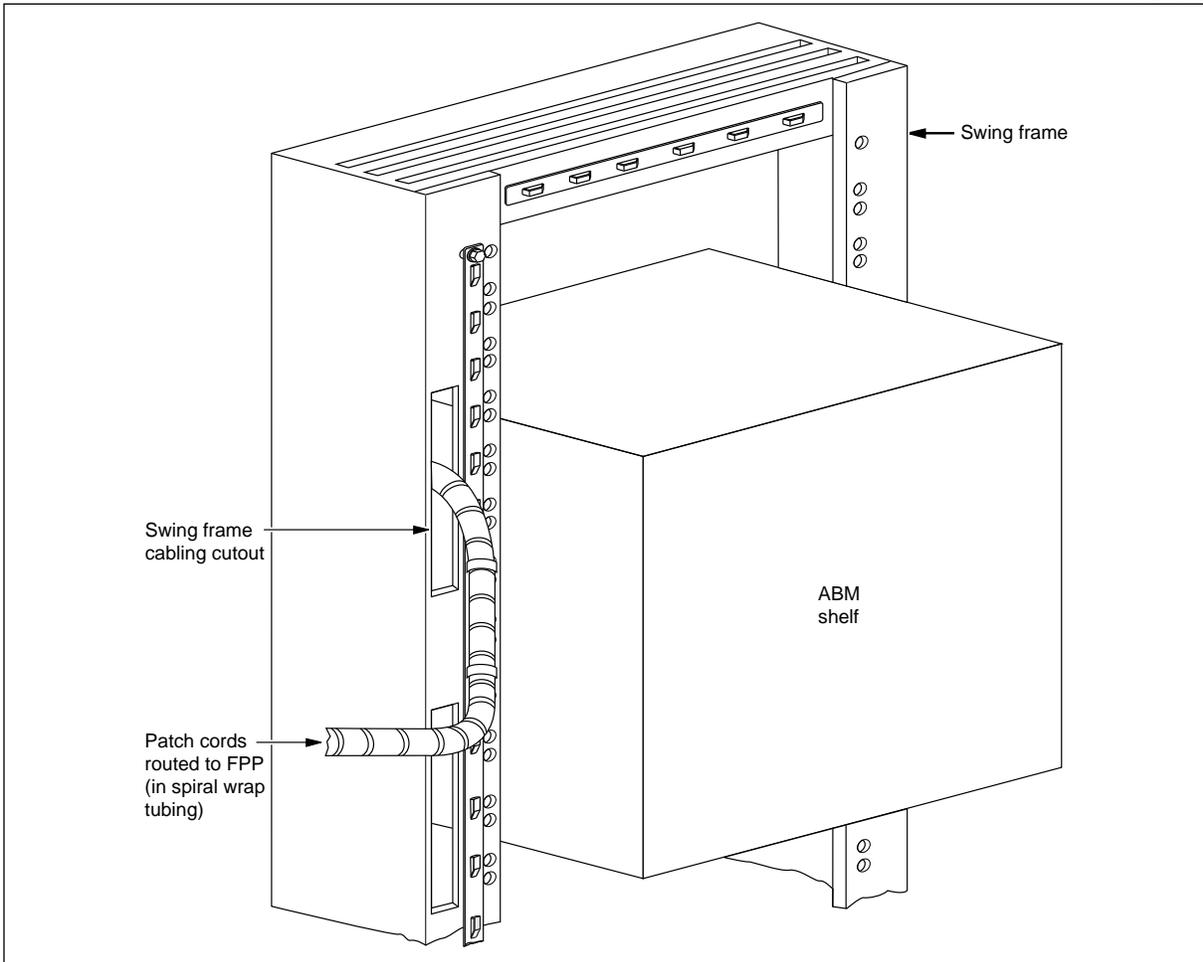
7-24 Routing and splicing the fiber cable

Procedure 7-3 (continued)

Routing the OSP fibers in split flex tubing to the FPP

Figure 7-10
Routing the fiber patch cords to the front of the ABM

FW-15135



—continued—

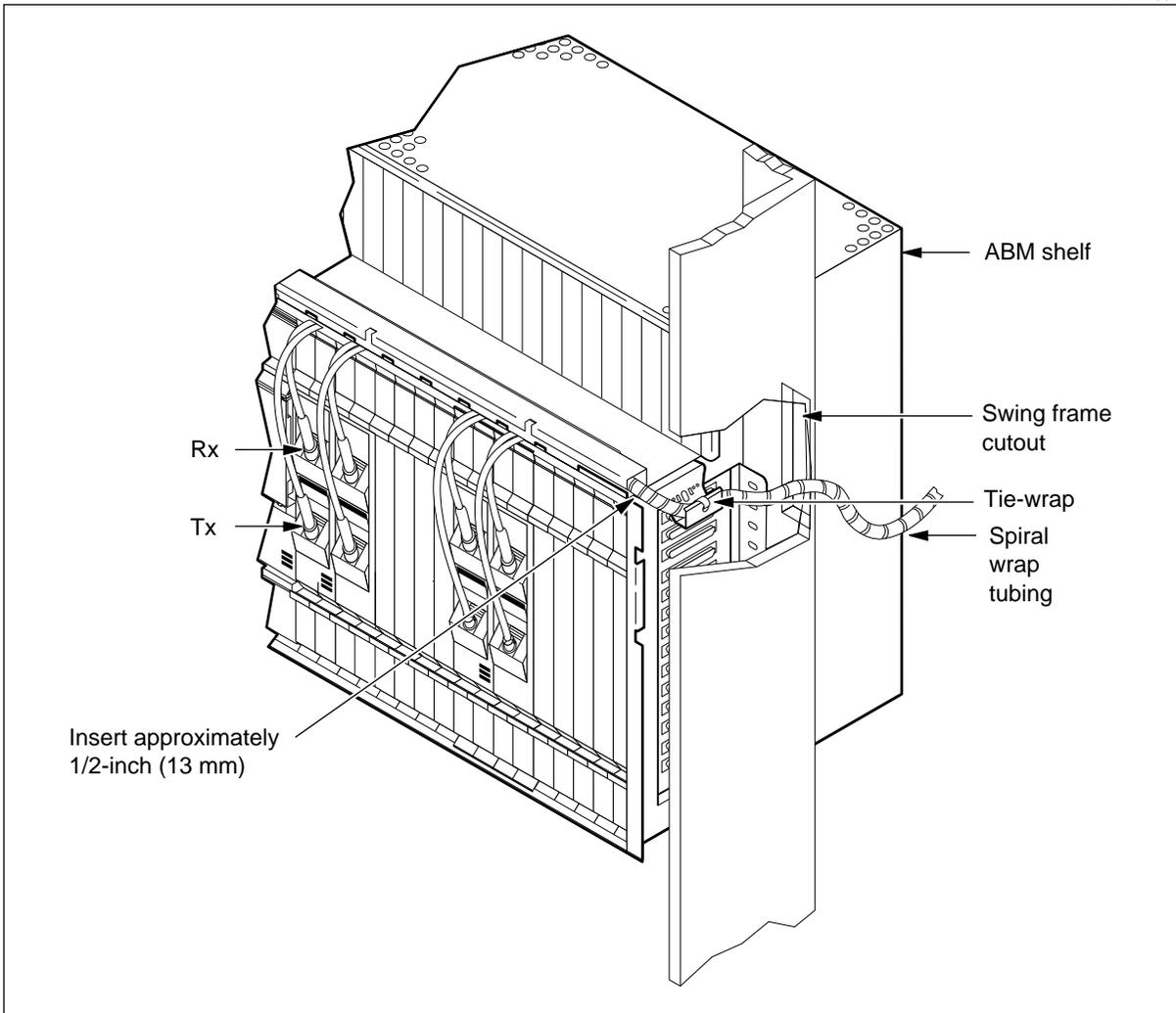
Procedure 7-3 (continued)

Routing the OSP fibers in split flex tubing to the FPP

Step	Action
5	Route the tubing to the front of the ABM shelf (see Figure 7-11). Note: Maintain at least the minimum bend radius (3.0 inches/76 mm) for the fiber pigtailed or patch cords installed.
6	Insert 1/2-inch (13 mm) of one end of the tubing into the cable trough on the top of the ABM shelf.
7	Extend the fiber patch cords along the cable trough at the top edge of the ABM shelf as shown in Figure 7-11.

Figure 7-11
Routing patch cords to the ABM OC-3 or OC-12 cards

FW-15310



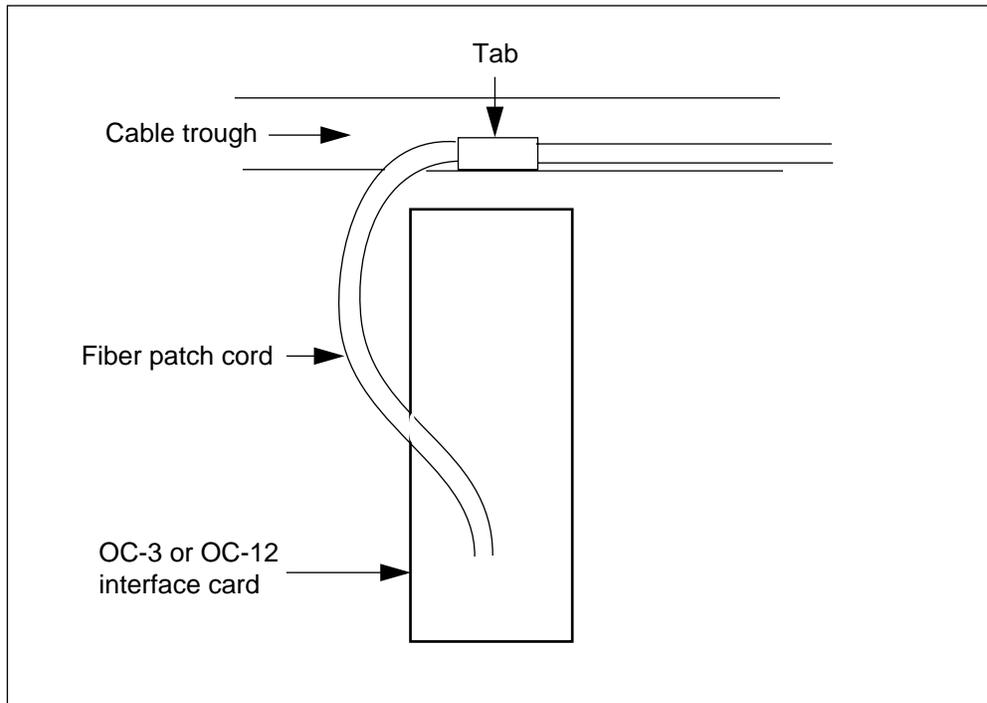
—continued—

Procedure 7-3 (continued)

Routing the OSP fibers in split flex tubing to the FPP

Step	Action
8	Hang the connector end of the patch cords out of the cable trough to the left of the tab that is located above the card to which the patch cord connects (see Figure 7-12).

Figure 7-12
Routing fiber patch cords to the OC-12 cards



CAUTION

Risk of damage to fiber patch cords

Ensure that each fiber patch cord exits the cable trough to the left of the tab that is immediately above the card to which the patch cord connects. If a cord exits the trough to the right of the tab, it may snag and become damaged when an adjacent card is removed.

—continued—

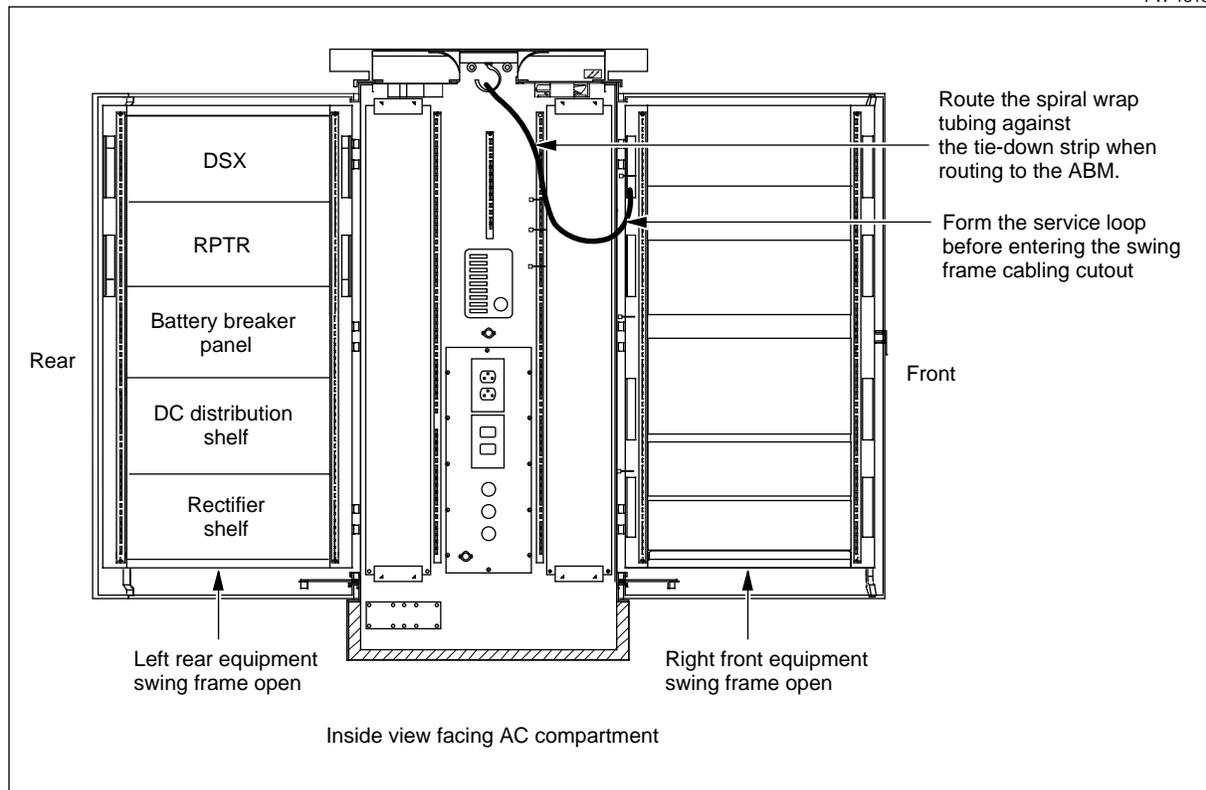
Procedure 7-3 (continued)

Routing the OSP fibers in split flex tubing to the FPP

Step	Action
9	Dress the tubing back toward the right side of the swing frame.
10	Tie wrap the tubing in place as shown in Figure 7-11 on page 7-25.
11	Route the tubing to the inside wall of the AC compartment (see Figure 7-13). Note: Leave a sufficient service loop in the routing to accommodate the swing frame opening and closing without putting undue pressure or tension on the tubing.
12	Tie wrap the tubing to the cable tie strips on the inside wall of the AC compartment as shown in Figure 7-13.
13	Route the tubing around to the rear side of the air baffle to the cable tie strips above the thermostat.
14	Tie wrap the tubing to the cable hooks in the roof as shown in Figure 7-13.

Figure 7-13
Patch cord routing on the interior AC compartment wall

FW-15137



—continued—

7-28 Routing and splicing the fiber cable

Procedure 7-3 (continued)

Routing the OSP fibers in split flex tubing to the FPP

Step	Action
15	Route the tubing through the cable trough or hooks in the ceiling of the cabinet as per the type of roof assembly as shown in Figure 7-14 or Figure 7-15.

Figure 7-14
Routing the patch cords in the ceiling of the heat exchanger roof assembly

FW-15138

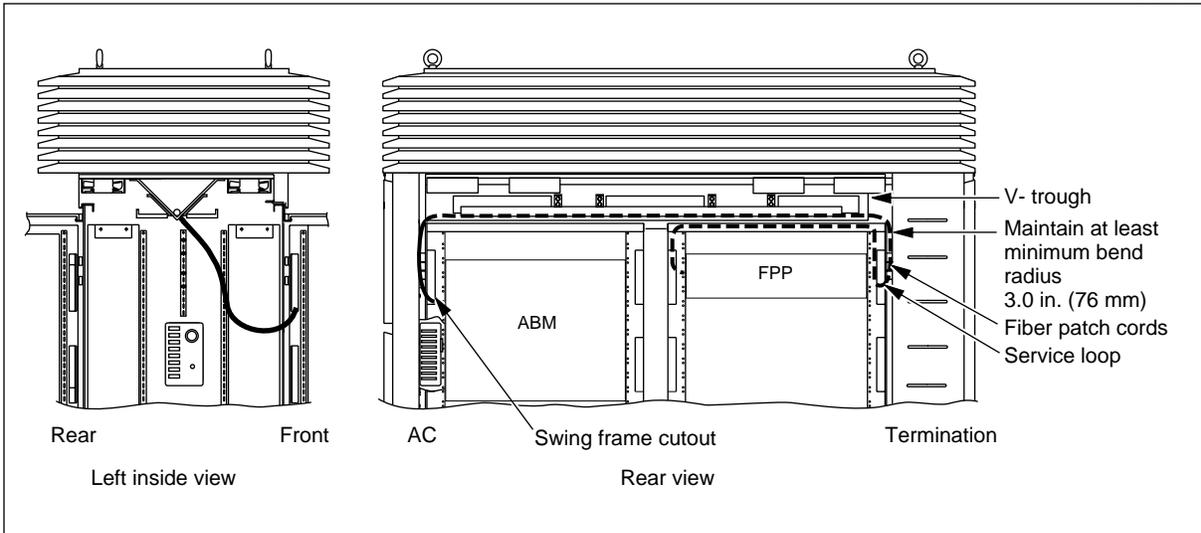
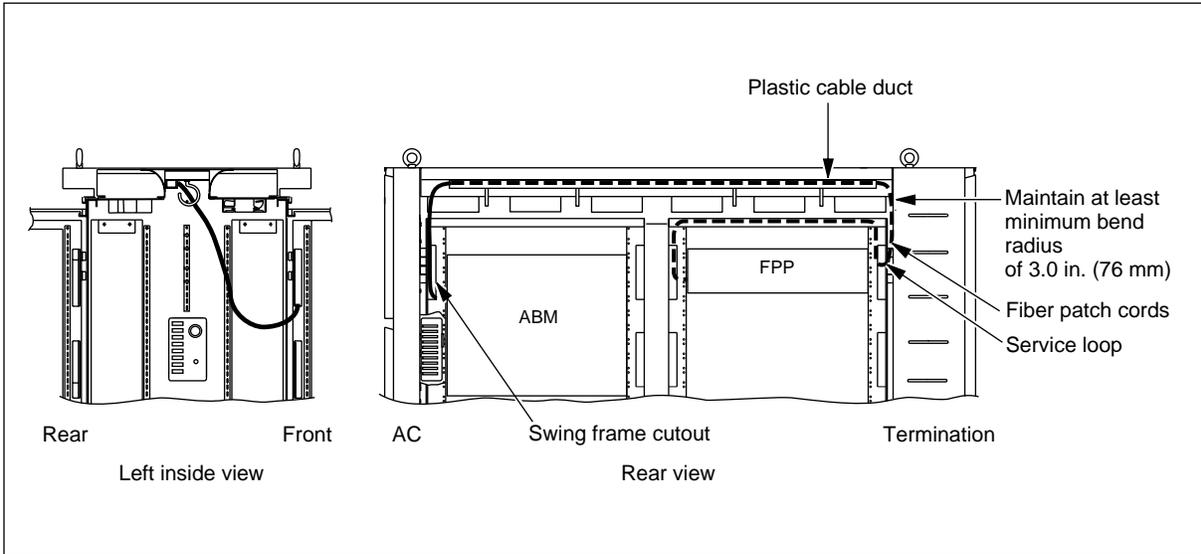


Figure 7-15
Routing the patch cords in the ceiling of the air induction roof assembly

FW-15139



—continued—

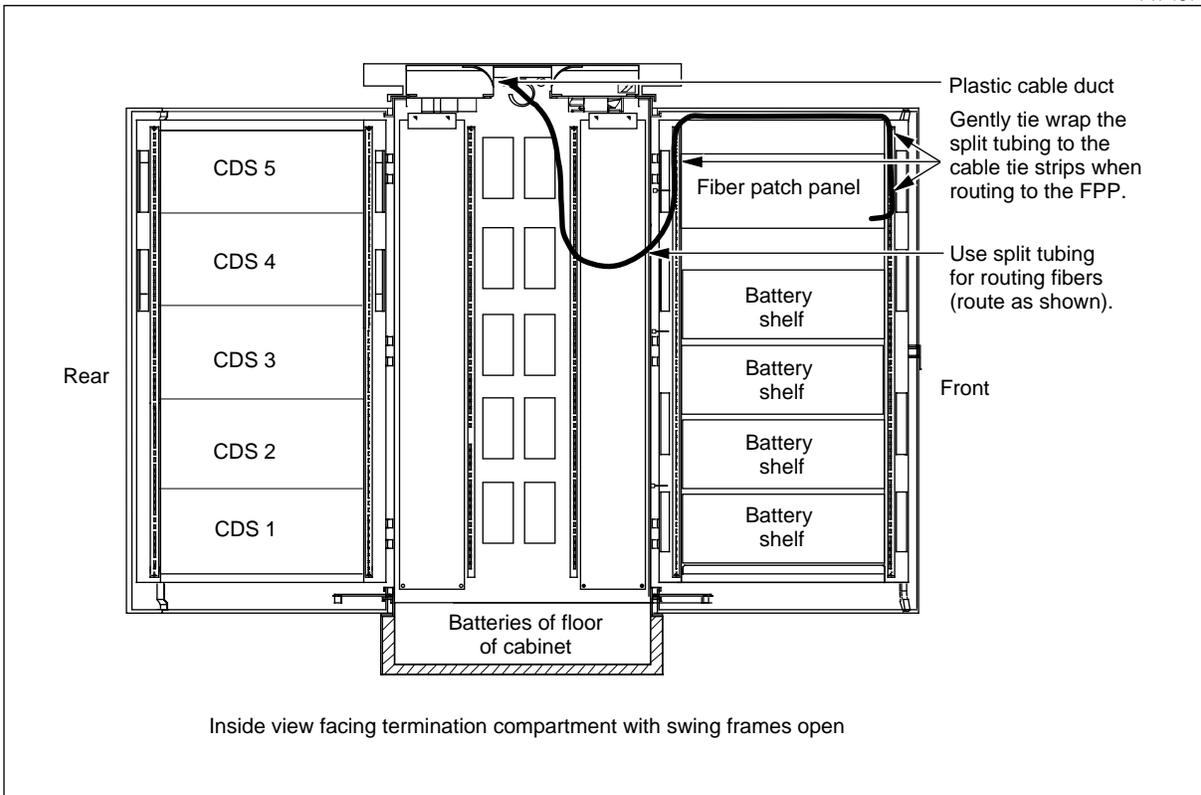
Procedure 7-3 (continued)

Routing the OSP fibers in split flex tubing to the FPP

Step	Action
16	Route the tubing down the inside wall of the termination compartment as shown in Figure 7-16.
17	Ensure that the right rear swing frame with the FPP panel installed is in the fully open position.
18	Form a service loop in the tubing as shown in Figure 7-16.
19	Route the tubing to the top of the swing frame.
20	Form the tubing across the back of the swing frame to the other side of the FPP.
21	Secure the tubing with tie wraps to the top of the swing frame.

Figure 7-16
Routing the patch cords down the inside termination compartment wall

FW-15140



—continued—

7-30 Routing and splicing the fiber cable

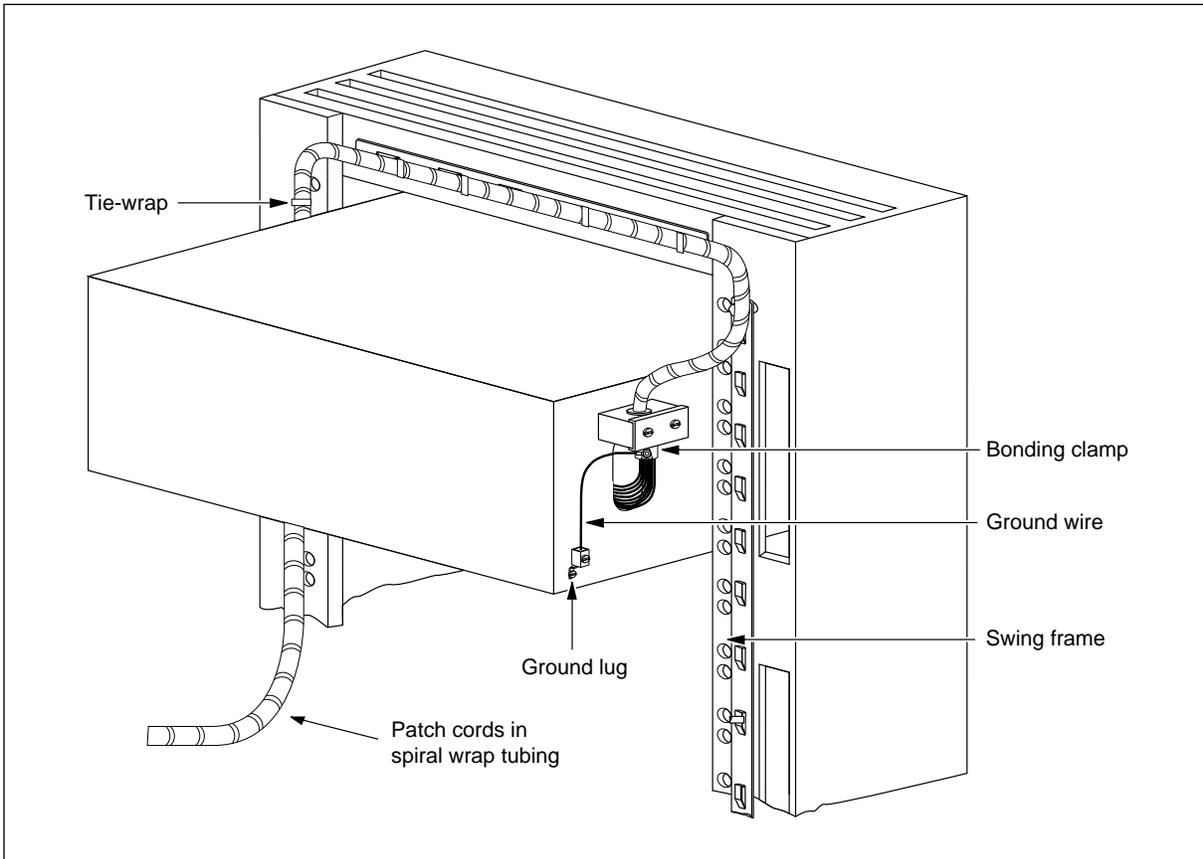
Procedure 7-3 (continued)

Routing the OSP fibers in split flex tubing to the FPP

Step	Action
22	Measure the length of the tubing to establish the point at which the tubing is to be butted. Note: The tubing should extend 1/2-inch (1.27 cm) further than the cable tie strap located inside the interior left rear of the FPP.
23	Butt the tubing. Note: Ensure that you do not cut the patch cords inside the tubing.
24	Route the patch cords and the tubing into the access hole in the FPP located on the rear right side as shown in Figure 7-17. Note: Maintain at least the minimum bend radius (3.0 inches/76 mm) for the fiber pigtails or patch cords installed.

Figure 7-17
Routing the patch cords into the FPP (right rear view)

FW-15141



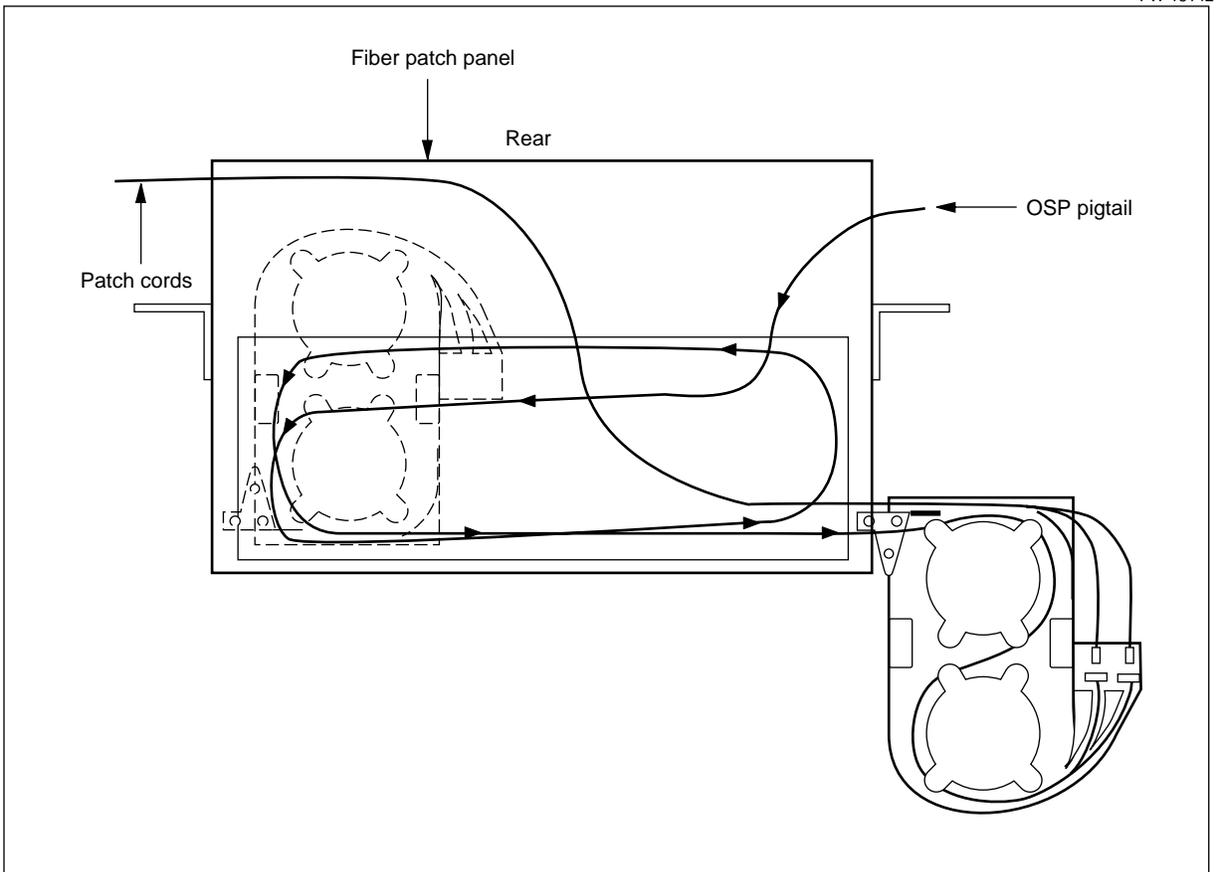
—continued—

Procedure 7-3 (continued)

Routing the OSP fibers in split flex tubing to the FPP

Step	Action
25	Route the tubing and patch cords into the cable tie strap.
26	Secure the tubing into the tie strap.
27	Route the patch cords into the fiber trays as shown in Figure 7-18. Note: Form the patch cords in the fiber management system as per the manufacturer's recommendations if you are using a system other than the FPP.
28	Connect the patch cord connectors to the FPP.
29	Connect the patch cords to the OC-3 and OC-12 cards in the ABM shelf.
30	Close the ABM shelf.

Figure 7-18
Routing the patch cords in the fiber trays of the FPP



—end—

Procedure 7-4 Routing fiber to the ABM when no FPP is installed

This procedure explains how to route fiber optic patch cords from an external fiber management system to the access bandwidth manager (ABM) shelf in the S800 cabinet.

Table 7-6 shows where to find information regarding fiber routing for:

- fibers to the FPP from the OSP cable that is bonded and grounded in the termination compartment
- fiber patch cords to the FPP from locations external to the S800A cabinet such as a customer owned manhole
- fiber patch cords to the ABM from locations external to the S800A cabinet such as a customer owned manhole

Table 7-6
Additional fiber routing and splicing information

If you are	Additional information can be found in
Routing the OSP fiber cable directly into the cabinet to an internal fiber management system such as an ADC fiber patch panel for bonding and grounding	Procedure 7-1 on page 7-5
Routing the OSP fibers into the cabinet to the fiber management system with the cable bonded and grounded in the termination compartment	Procedure 7-2 on page 7-15
Routing the fiber patchcords from the ABM to the fiber management system in the cabinet	Procedure 7-3 on page 7-20

—continued—

Procedure 7-4 (continued)

Routing fiber to the ABM when no FPP is installed

Prerequisites for installation

The prerequisites for routing the fiber patch cords include:

- The cabinet has been mounted on the selected concrete pad as defined in Chapters 1 through 6 of this practice.
- All hardware and materials are available and have been checked for completeness and readiness for the installation.
- All the required drawings, local installation instructions, job specifications, and other documentation are available and ready for use.
- A fiber management system has been used in a location external to the S800A cabinet and only fiber patch cords or pigtails are to be run into the cabinet.

Precautions

Read the following cautions before beginning the procedure:



CAUTION

Risk of damage to fiber optic patchcords

Handle the fibers with extreme care. Never bend the cables into a curve with a radius smaller than 3.0 inches (76 mm). Tighten connections to the optical units finger tight only.



DANGER

Laser radiation hazard

Avoid direct exposure to fiber or optical connector ends where the laser signal can be reached. Laser radiation is present and can cause serious eye damage.

Get immediate medical attention if a glass chip becomes lodged in the eye area.



CAUTION

Clean all optical connectors

Dust can adversely affect optical connector performance. Clean all connectors before inserting the connectors into the mating sleeves. Use clean dust caps when connectors are not in use.

—continued—

Procedure 7-4 (continued)

Routing fiber to the ABM when no FPP is installed**Cable entry**

The termination compartment has four 4.50-inch inside diameter (ID) openings for 4.00-inch trade size conduit and one 2.00-inch ID opening for 1.50-inch trade size conduit.

Note: All trade sizes listed are based on Schedule 40 PVC.

Table 7-7 shows the conduit openings in the termination compartment.

Table 7-7
Termination compartment conduit openings

Opening size	Conduit trade size	Function
4.50 inches (11.43 cm)	4.00 inches (10.16 cm)	VF - pairs 1–600 cable entrance
4.50 inches (11.43 cm)	4.00 inches (10.16 cm)	VF - pairs 601–1200 cable entrance
4.50 inches (11.43 cm)	4.00 inches (10.16 cm)	VF - miscellaneous cable entrance
4.50 inches (11.43 cm)	4.00 inches (10.16 cm)	VF - HF or fiber cable entrance
2.00 inches (5.08 cm)	1.50 inches (3.81 cm)	Earth ground rod connection entrance

Table 7-8 shows where the fiber cabling has been pulled into the termination compartment (see Chapter 4, “Installing the OSP cables”) and how much slack has been pulled for cable routing.

Table 7-8
OSP cable entry locations and lengths

When you pull cable for	Into the termination compartment conduit opening at this location	Then leave this number of feet of cable for routing
VF cable pairs 1–600	far left	10 ft (3.1 m)
VF cable pairs 601–1200	middle left	12 ft (3.7 m)
VF or miscellaneous pairs	middle right	25 ft (7.6 m)
T1 distribution or maintenance pairs	middle right	5 ft (1.5 m)
Fiber	far right	25 ft (7.6 m)

—continued—

Procedure 7-4 (continued)

Routing fiber to the ABM when no FPP is installed

Special tools required

There are no special tools required for completing this procedure.

Materials required

- split flex tubing, approximately 30 ft (9.12 m)
- fiber patch cords or pigtails (see Table 7-9, Table 7-10 on page 7-36 and Table 7-11 on page 7-36)

Table 7-9 lists the ordering information for optical patch cords.

Table 7-9
Optical patch cords

PEC	Length (meters)	Length (feet)	Connector type
NT7E46AB	10	32.8	Biconic-biconic
NT7E46AC	15	49.2	
NT7E46AD	20	65.6	
NT7E46AE	30	98.4	
NT7E46BB	10	32.8	FC-FC
NT7E46BC	15	49.2	
NT7E46BD	20	65.6	
NT7E46BE	30	98.4	
NT7E46CB	10	32.8	ST-ST
NT7E46CC	15	49.2	
NT7E46CD	20	65.6	
NT7E46CE	30	98.4	
NT7E46FB	10	32.8	SC-SC
NT7E46FC	15	49.2	
NT7E46FD	20	65.6	
NT7E46FE	30	98.4	

Note: Ensure that the type of connector on the patchcord is compatible with the type of connectors on the OC-3 or OC-12 card in the ABM shelf and with the type of connectors in the FPP.

—continued—

Procedure 7-4 (continued)

Routing fiber to the ABM when no FPP is installed

Table 7-10 lists the ordering information for optical patch cords equipped with miniature variable optical attenuators (mVOA).

Table 7-10
Optical patch cords with miniature variable attenuators

PEC	Length (in meters)	Length (feet)	Connector type
NT7E47AB	10	32.8	Biconic-biconic
NT7E47AC	15	49.2	
NT7E47AD	20	65.6	
NT7E47AE	30	98.4	
NT7E47BB	10	32.8	FC-FC
NT7E47BC	15	49.2	
NT7E47BD	20	65.6	
NT7E47BE	30	98.4	
NT7E47CB	10	32.8	ST-ST
NT7E47CC	15	49.2	
NT7E47CD	20	65.6	
NT7E47CE	30	98.4	
NT7E47FB	10	32.8	SC-SC
NT7E47FC	15	49.2	
NT7E47FD	20	65.6	
NT7E47FE	30	98.4	

Table 7-11 lists the ordering information for optical pigtailed.

Table 7-11
Optical pigtailed

PEC	Length (meters)	Length (feet)	Connector type
NT7E48BE	20	65.6	Biconic
NT7E48CA	20	65.6	FC
NT7E48CB	20	65.6	ST
NT7E48FA	20	65.6	SC

—continued—

Procedure 7-4 (continued)

Routing fiber to the ABM when no FPP is installed

Action

Step	Action
1	<p>Label each end of the optical patch cords or pigtails (see Table 7-9 on page 7-35 through Table 7-11 on page 7-36) with the following information:</p> <ul style="list-style-type: none">• the slot number in the ABM shelf for the intended OC-3 or OC-12 optical interface card• the direction of signal, Tx (transmit) or Rx (receive)
2	<p>Encase the fibers in split tubing.</p>
3	<p>Route the tubing with the fiber pigtails or patch cords inside into the cabinet through the far right-hand cable entry duct in the bottom of the termination compartment as shown in Figure 7-19 on page 7-38.</p> <p>Note: Ensure that the length of the pigtail or patch cords routed into the cabinet is sufficient to reach the ABM shelf (approximately 6 meters or 19 feet).</p>
4	<p>Route the tubing up the cable ladder on the right-hand side of the termination compartment into the fiber cable entry hole at the top of the compartment.</p> <p>Note: Maintain at least the minimum bend radius (3.0 inches/76 mm) for the fiber pigtails or patch cords installed.</p>
5	<p>Tie wrap the tubing to the cable ladder.</p>

—continued—

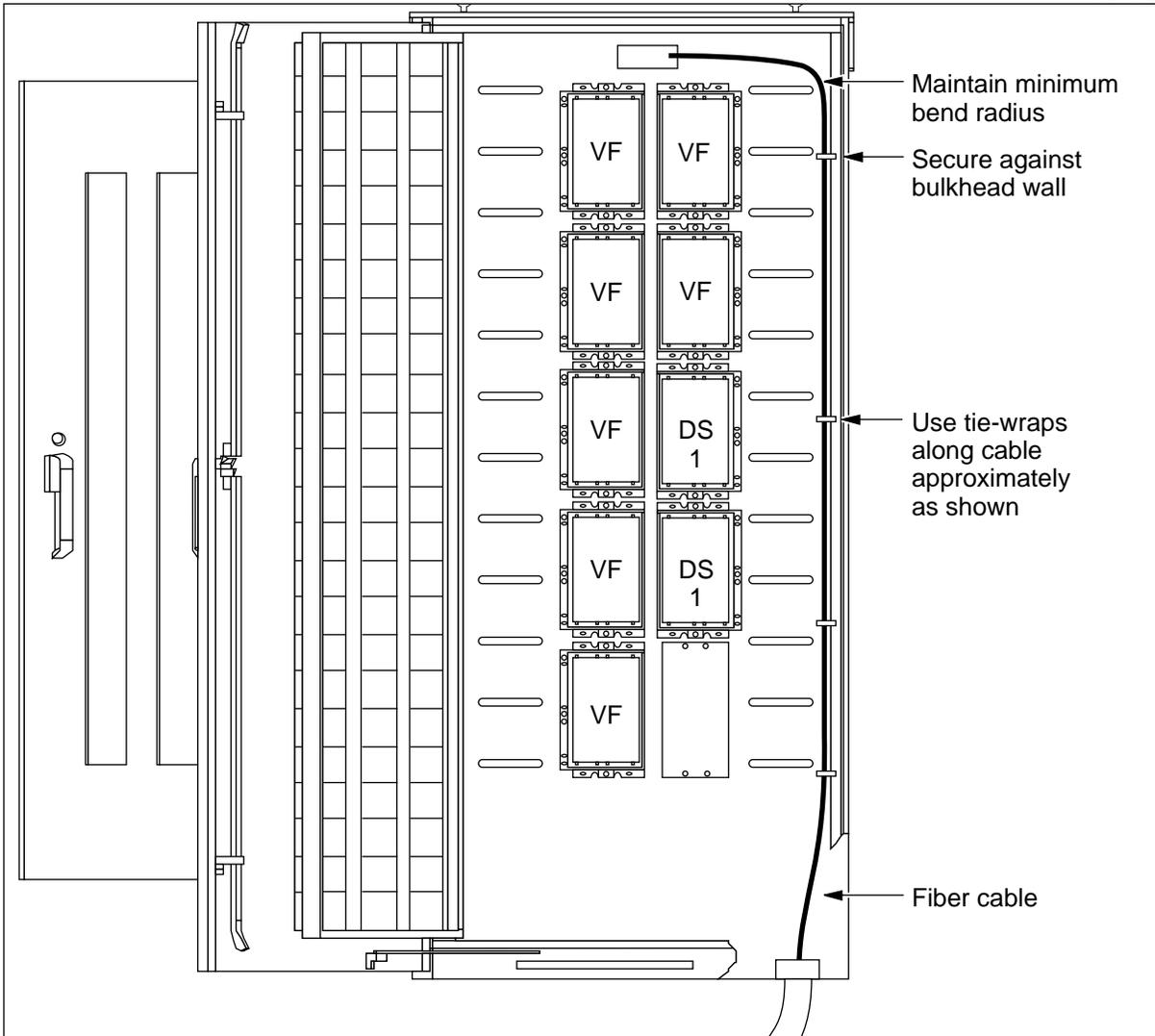
7-38 Routing and splicing the fiber cable

Procedure 7-4 (continued)

Routing fiber to the ABM when no FPP is installed

Figure 7-19
Routing of fiber cable to interior cabinet

FW-15126



—continued—

Procedure 7-4 (continued)

Routing fiber to the ABM when no FPP is installed

Step	Action
6	Route tubing across the ceiling of the cabinet as per the type of roof assembly on the rear side of the air baffle (see Figure 7-20 or Figure 7-21). Note 1: For the heat exchanger roof, route the fiber inside the V-baffle enclosure (see Figure 7-20). Note 2: The air induction roof has a cable hooks for all cable routing (see Figure 7-21).
7	Tie wrap the fiber cable to the cabinet ceiling as per the type of roof assembly.

Figure 7-20
Tie wrap the fiber cable to the ceiling of the heat exchanger roof assembly

FW-15144

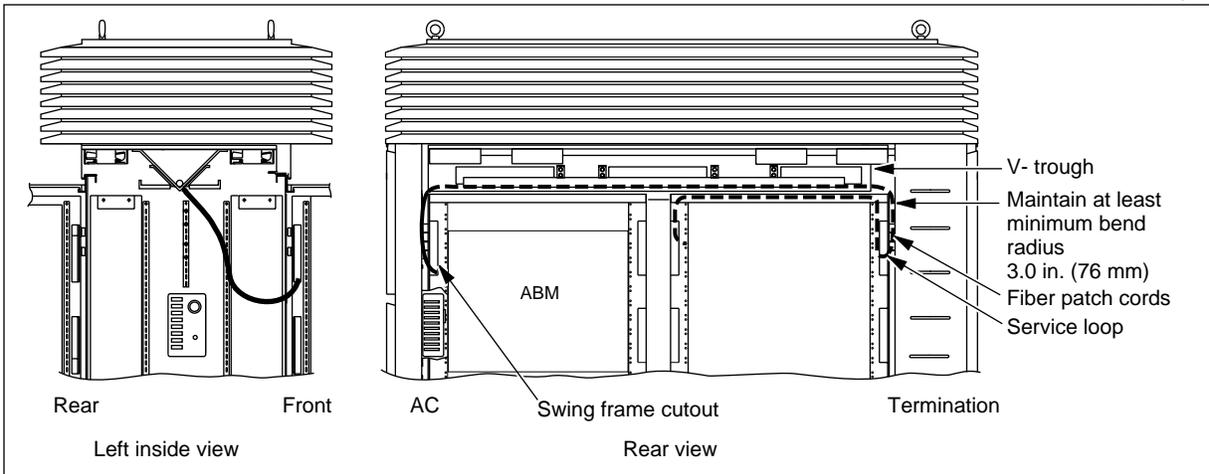
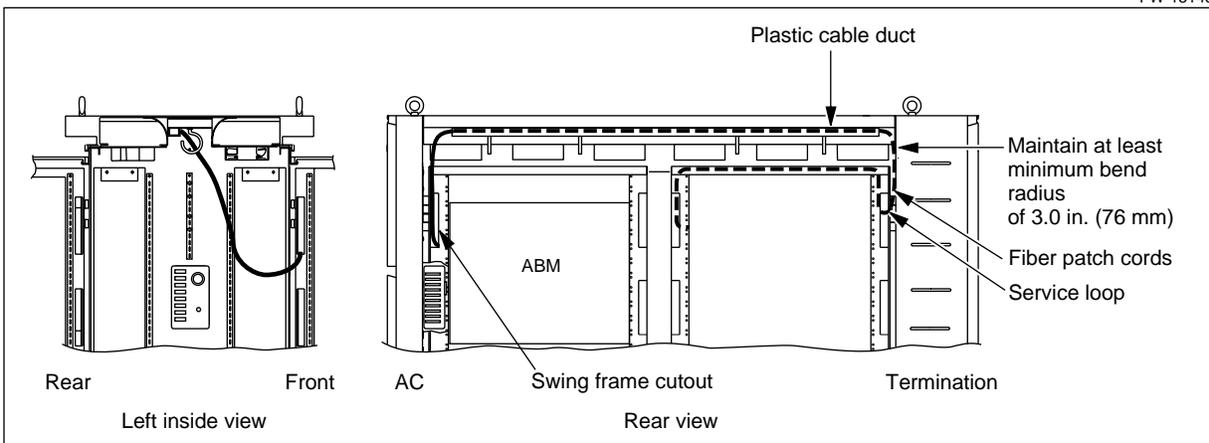


Figure 7-21
Tie wrap the fiber cable to the ceiling of the air induction roof assembly

FW-15145



—continued—

7-40 Routing and splicing the fiber cable

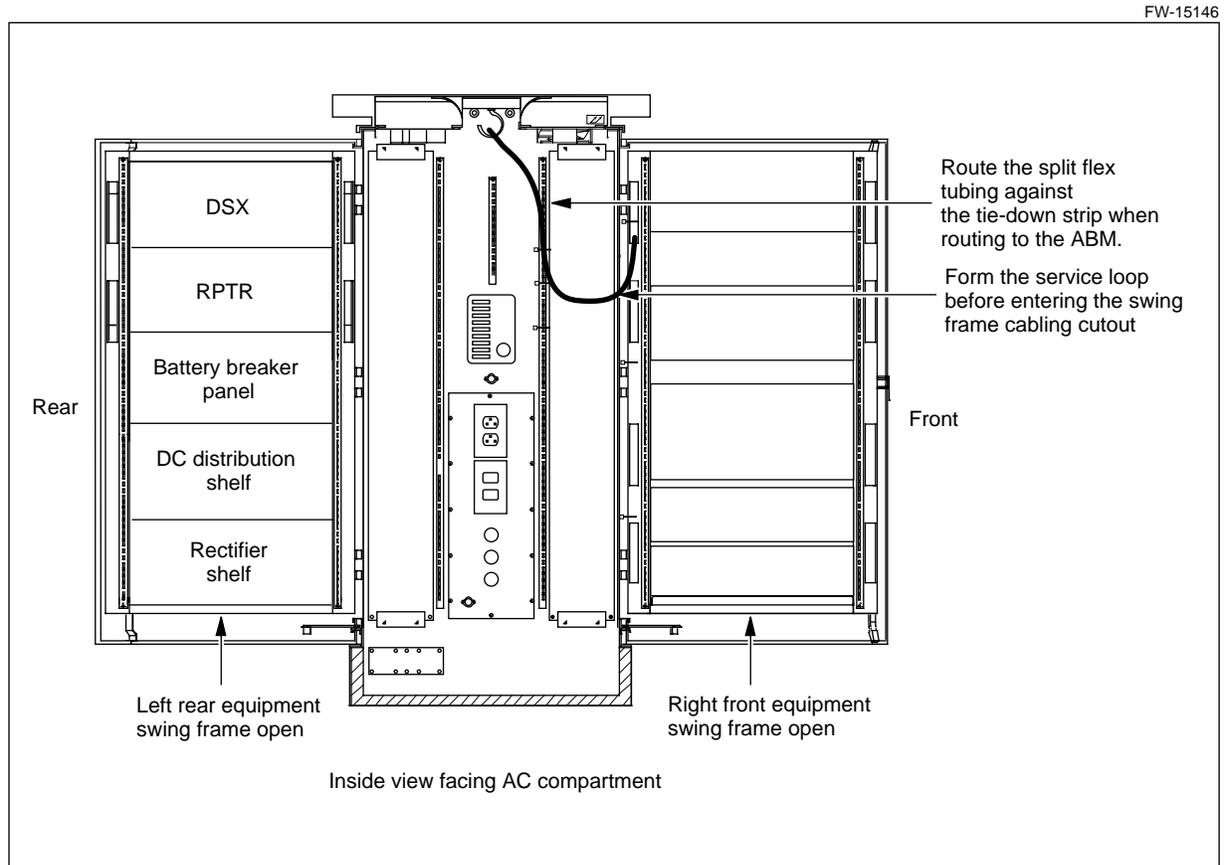
Procedure 7-4 (continued)

Routing fiber to the ABM when no FPP is installed

Step	Action
8	Route the tubing down the inside wall of the AC compartment as shown in Figure 7-22.
9	Route the tubing to the front side of the baffle.
10	Route the tubing to the rear of the ABM shelf in the front right swing frame.

Figure 7-22

Routing the fibers down the inside wall of the AC compartment



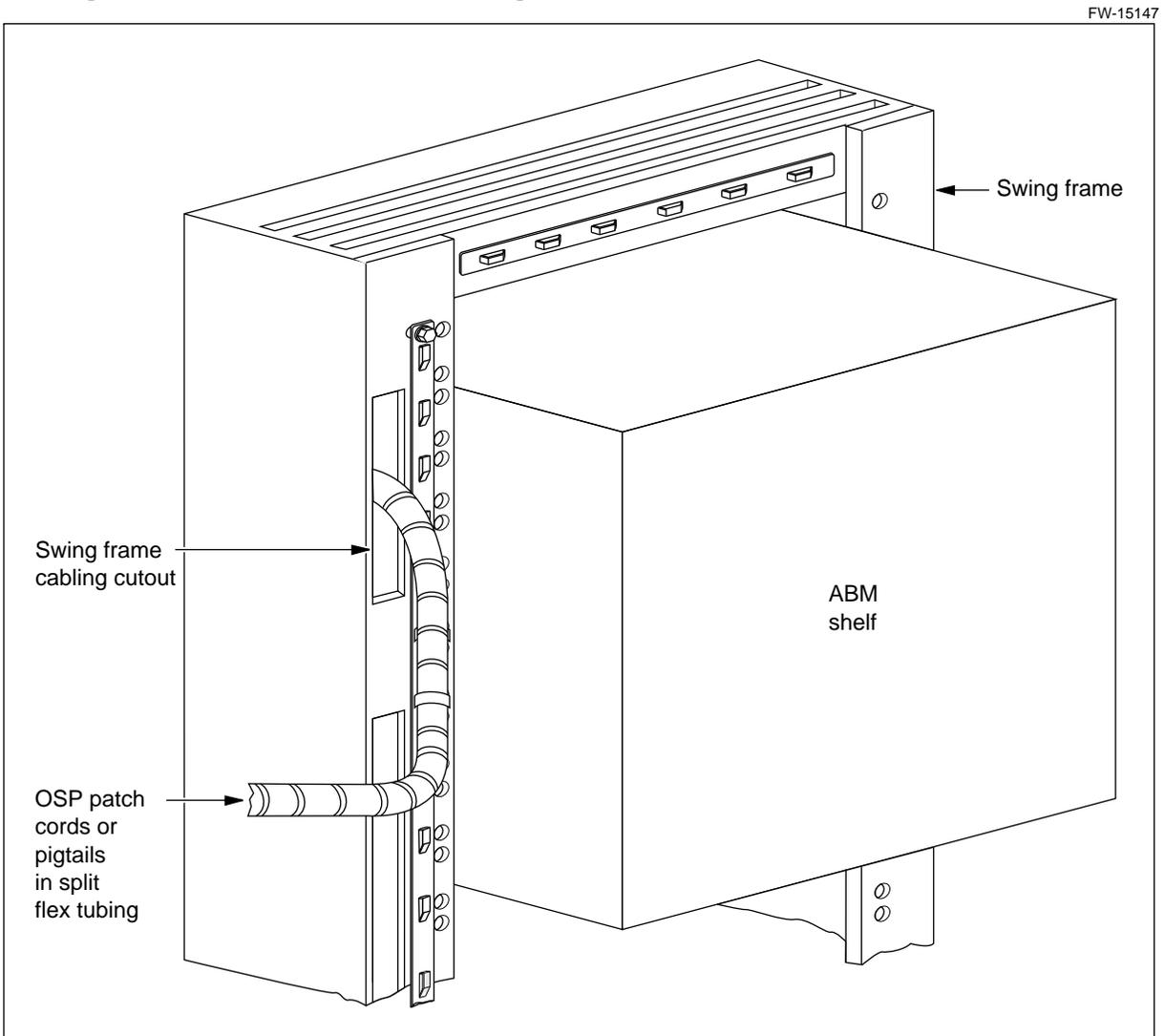
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Procedure 7-4 (continued)

Routing fiber to the ABM when no FPP is installed

Step	Action
11	Route the tubing through the swing frame cabling cutout on the hinge side of the swing frame to the front of the ABM shelf as shown in Figure 7-23. Note: Leave a sufficient service loop in the routing to accommodate the swing frame opening and closing without putting undue pressure or tension on the tubing.

Figure 7-23
Routing the fibers into the ABM shelf swing frame



—continued—

7-42 Routing and splicing the fiber cable

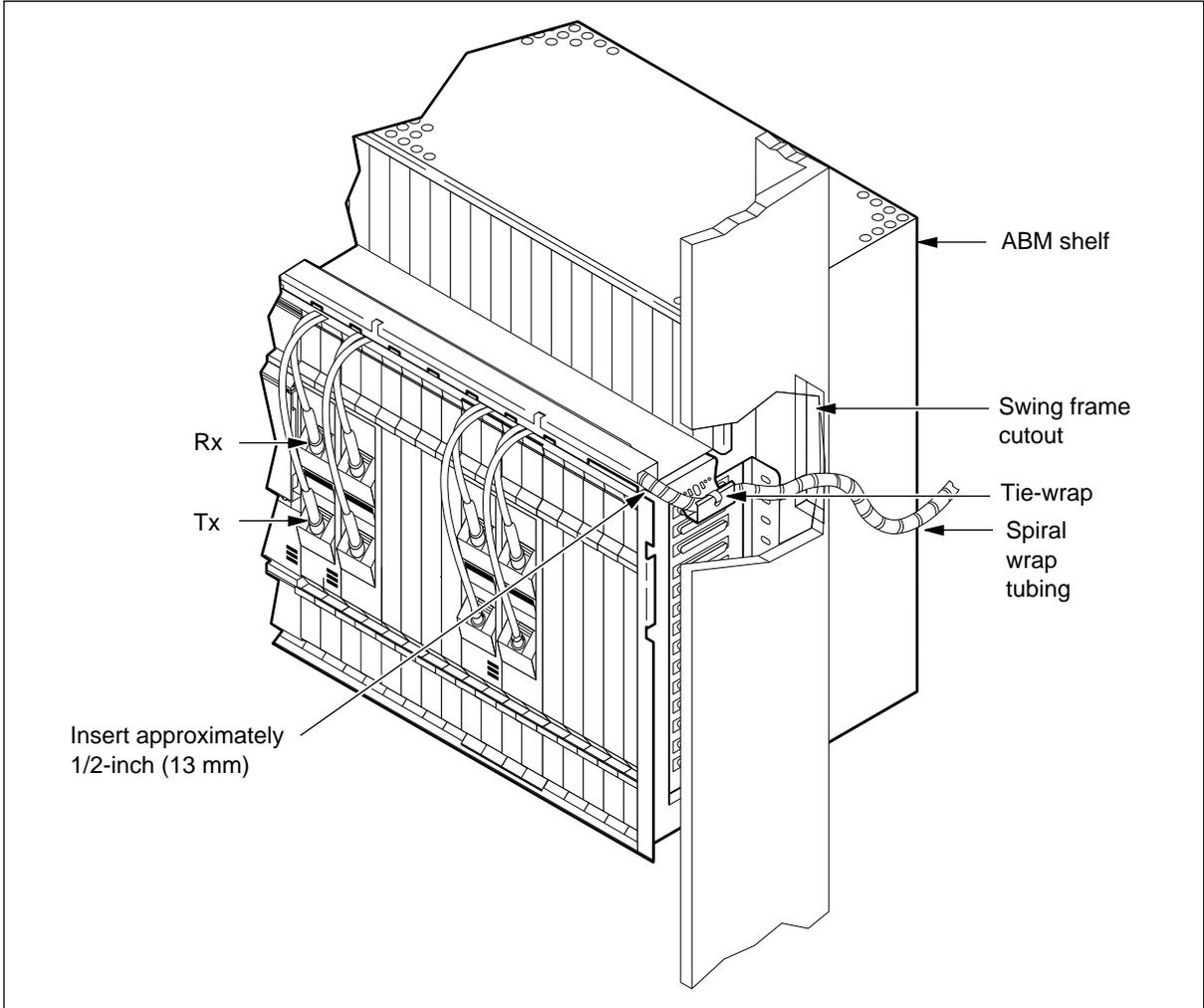
Procedure 7-4 (continued)

Routing fiber to the ABM when no FPP is installed

Step	Action
12	Route the tubing across the top of the ABM shelf (see Figure 7-24). Note: Maintain at least the minimum bend radius (3.0 inches/76 mm) for the fiber pigtailed or patch cords installed.
13	Butt the tubing at a length of 1 inch (2.54 cm) inside the ABM cable trough.
14	Insert 1/2-inch (13 mm) of one end of the tubing into the cable trough on the top of the ABM shelf.
15	Extend the fiber patch cords along the cable trough at the top edge of the ABM shelf as shown in Figure 7-24.

Figure 7-24
Routing the fibers into the ABM shelf to the OC-3 or OC-12 card

FW-15310



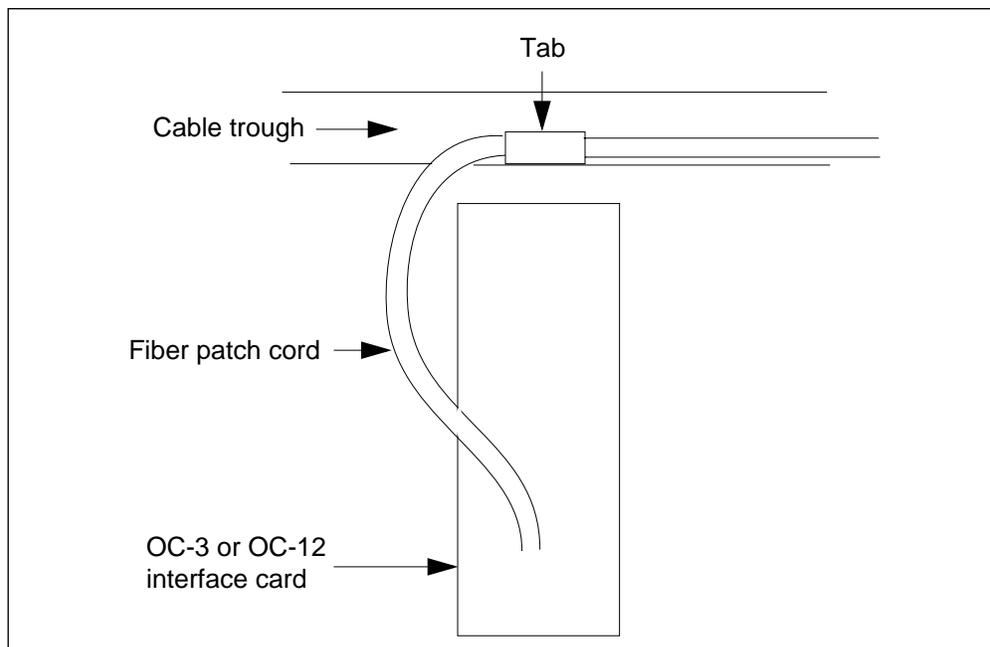
—continued—

Procedure 7-4 (continued)

Routing fiber to the ABM when no FPP is installed

Step	Action
16	Hang the connector end of the patch cords out of the cable trough to the left of the tab that is located above the card to which the patch cord connects (see Figure 7-25).
17	Ensure that each fiber patch cord exits the cable trough to the left of the tab that is located immediately above the OC-3 or OC-12 interface card to which the patch cord or pigtail connects.

Figure 7-25
Routing fiber patch cords to the OC-3 or OC-12 cards



CAUTION

Risk of damage to fiber patch cords

Ensure that each fiber patch cord exits the cable trough to the left of the tab that is immediately above the card to which the patch cord connects. If a cord exits the trough to the right of the tab, it may snag and become damaged when an adjacent card is removed.

—continued—

7-44 Routing and splicing the fiber cable

Procedure 7-4 (continued)

Routing fiber to the ABM when no FPP is installed

Step	Action
18	Connect the patch cord or pigtail to the OC-3 or OC-12 card as labeled on the fiber. <ul style="list-style-type: none">• the slot number in the ABM shelf for the intended OC-3 or OC-12 optical interface card• the direction of signal, Tx (transmit) or Rx (receive)
19	Dress the split tubing back towards the rear of the ABM shelf.
20	Tie wrap the tubing as shown in Figure 7-24 on page 7-42.
21	Tie wrap the tubing to the cable tie straps on the rear of the ABM shelf swing frame.
22	Check the entire route of the tubing to ensure that there is no excessive stress on the tubing and fibers when the swing frames are opened and closed.
23	Close the swing frames and cabinet doors.

—end—

Provisioning the external alarms

This section provides installation procedures for the provisioning and verification of the wiring of cabinet alarms for the Series 800A cabinet. Software controlled external alarms are factory wired internal alarms and require no physical connections to be made in the cabinet at the time of installation.

Customer reserved optional alarms are physically connected to a wire-wrap block on the breaker interface panel from external sources. The breaker interface panel (BIP) contains a connectorized wire-wrap block that provides a location for office connections for customer reserved optional office alarms, orderwire and parallel telemetry. Reference Chapter 13, “Cabinet and equipment wiring and cabling” for complete alarm wiring connection schematics.

How to use this chapter

In the following table, you will find a list of the procedures to provision external alarms and wire reserved customer alarms for the AccessNode S800A Outside Plant (OSP) cabinet. Perform the procedures in the order listed. If you cannot successfully complete these procedures, contact your next level of support.

Chapter task list

Task	See
Provisioning and verifying the external alarms	Procedure 8-1 on page 8-3
Wiring customer reserved optional defined external alarms	Procedure 8-2 on page 8-5

Prerequisites for installation

The choice of site and compliance with local regulations (such as the applicable electrical codes, right-of-way easements, and noise requirements) are the responsibility of the operating company.

- The cabinet has been mounted on the selected concrete pad as defined in Chapter 2, “Installing the cabinet”.
- All hardware and materials are available, and have been checked for completeness and readiness for the installation.
- All the required drawings, local installation instructions, job specifications, and other documentation are available and ready for use.

Procedure 8-1

Provisioning and verifying the external alarms

This procedure explains the provisioning recommendations and how to provision the software controlled S800A external alarms.

Alarm definitions are described in Table 8-1 on page 8-4.

Wiring options and connection points for standard customer reserved option alarms are reflected in Procedure 8-2 on page 8-5, “Wiring customer reserved optional defined external alarms”.

Reference information on the S800A alarm wiring diagrams is contained in Chapter 13, “Cabinet and equipment wiring and cabling”.

Documentation

See Interconnect schematic IS1W00.

Tools required

There are no special tools required for this procedure.

Materials required

There are no material requirements for this procedure.

—continued—

8-4 Provisioning the external alarms

Procedure 8-1 (continued)

Provisioning and verifying the external alarms

Action

Step	Action
1	<p>Provision the E2A parallel telemetry alarms through the AccessNode software according to the Nortel Networks recommended provisioning shown in Table 8-1.</p> <p>Note 1: The E2A provisionable alarms may be set according to standard local customer practices. Nortel Networks recommends that the alarms are provisioned in the software as per that shown in Table 8-1.</p> <p>Note 2: Refer to <i>System Administration Procedures</i>, 323-3001-302, in <i>Operations, Administration, & Provisioning</i>, Volume 4A, for AccessNode alarm provisioning.</p> <p>Note 3: Alarm testing will be done during the execution of the procedures in <i>Commissioning and Testing</i>, Volume 3.</p>

Table 8-1
Provisionable E2A alarm definitions

Provisionable E2A alarms	Scan point	Definition	Alarm severity	Signal name	Wire-wrap block pin
AC ALM	1	AC Fail	Minor	XE2AR01	1
AC ALM	1	AC Fail	Minor	XE2AR01	1
LVA	2	Low Voltage	Major	XE2AR02	3
ACO	3	<Reserved>	N/A	XE2AR03	4
DOALM	4	Door Ajar	Major	XE2AR04	6
LTMP	5	Low Temperature	Major	XE2AR05	7
FA	6	Fuse Alarm (BBP Circuit Breakers)	Major	XE2AR06	9
MIN	7	RFA Minor	Minor	XE2AR07	10
MAJ	8	RFA Major	Major	XE2AR08	12
RPTR FA	9	Repeater Fuse Alarm	Major	XE2AR09	13
RPTR LOS	10	Repeater Loss of Signal (LOS)	Major	XE2AR010	15
RPTR ERR	11	Repeater Error (ERR)	Major	XE2AR011	16
LGND		Logic Ground		LGND	2, 5, 8, 11, 14, 17,18

—end—

Procedure 8-2

Wiring customer reserved optional defined external alarms

Customer reserved optional (CRO) alarms are provided for customer defined alarm reporting options. This procedure explains the wiring recommendations for CRO alarms.

Alarm provisioning will be done during the execution of the procedures in *System Administration Procedures*, 323-3001-302, in *Operations, Administration, & Provisioning*, Volume 4A, for AccessNode alarm provisioning.

Alarm testing will be done during the execution of the telephony and alarm test procedures in *Commissioning and Testing*, Volume 3.

Note the following items when performing this procedure:

- Wiring diagrams for customer defined alarms are reflected in Chapter 13, “Cabinet and equipment wiring and cabling”.
- Alarm definitions are described in Table 8-2 on page 8-6.
- Figure 8-1 shows the breaker interface panel (BIP) alarm block pinfield layout. The pinfield layout for NT4K14BA is rotated 90° clockwise from that shown in Figure 8-1.
- Relays or switches for alarm reporting must have normally open (NO) contacts.
- Standard alarm configurations may be changed (by reconnecting the jumpers) based on local requirements.
- Wire wrap all optional jumpers between the termination pins of the BIP wire-wrap block on the top of the wire-wrapped terminations of the factory installed alarm cable.

Documentation

See Interconnect Schematic IS1W00.

Tools required

One wire-wrap tool for 24 AWG solid wire is required.

Materials required

One 24 AWG solid wire with green colored nonflammable insulation is required.

—continued—

8-6 Provisioning the external alarms

Procedure 8-2 (continued)

Wiring customer reserved optional defined external alarms

Action

Step	Action
1	Open the front right-hand S800A AccessNode cabinet door to access the breaker interface panel (BIP).
2	Set up the optional equipment (according to the manufacturers recommended procedures) to generate the specific alarm required. Note: Relays or switches for alarm reporting must have normally open (NO) contacts.
3	Locate the wire-wrap block on the front left-hand side of the BIP shelf (see Figure 8-1).
4	Using a 24 AWG wire-wrap tool, terminate the customer defined optional external alarms to the standard alarm wiring locations on the BIP (see Table 8-2 below and Figure 8-1 on page 8-7).

Table 8-2
Provisionable CRO alarm definitions

Provisionable CRO alarms	Definition	Wire-wrap block pin
CRAUD	Critical Audible	31
CRAUD1	Critical Audible Return	34
VRVIS	Critical Visual	32
CRVIS1	Critical Visual Return	35
MJAUD	Major Audible	33
MJAUD1	Major Audible Return	36
MNAUD	Minor Audible	37
MNAUD1	Minor Audible Return	40
MJVIS	Major Visual	38
MJVIS1	Major Visual Return	41
MNVIS	Minor Visual	39
MNVIS1	Minor Visual Return	42
LGND	Logic Ground	5, 8, 11, 18

—continued—

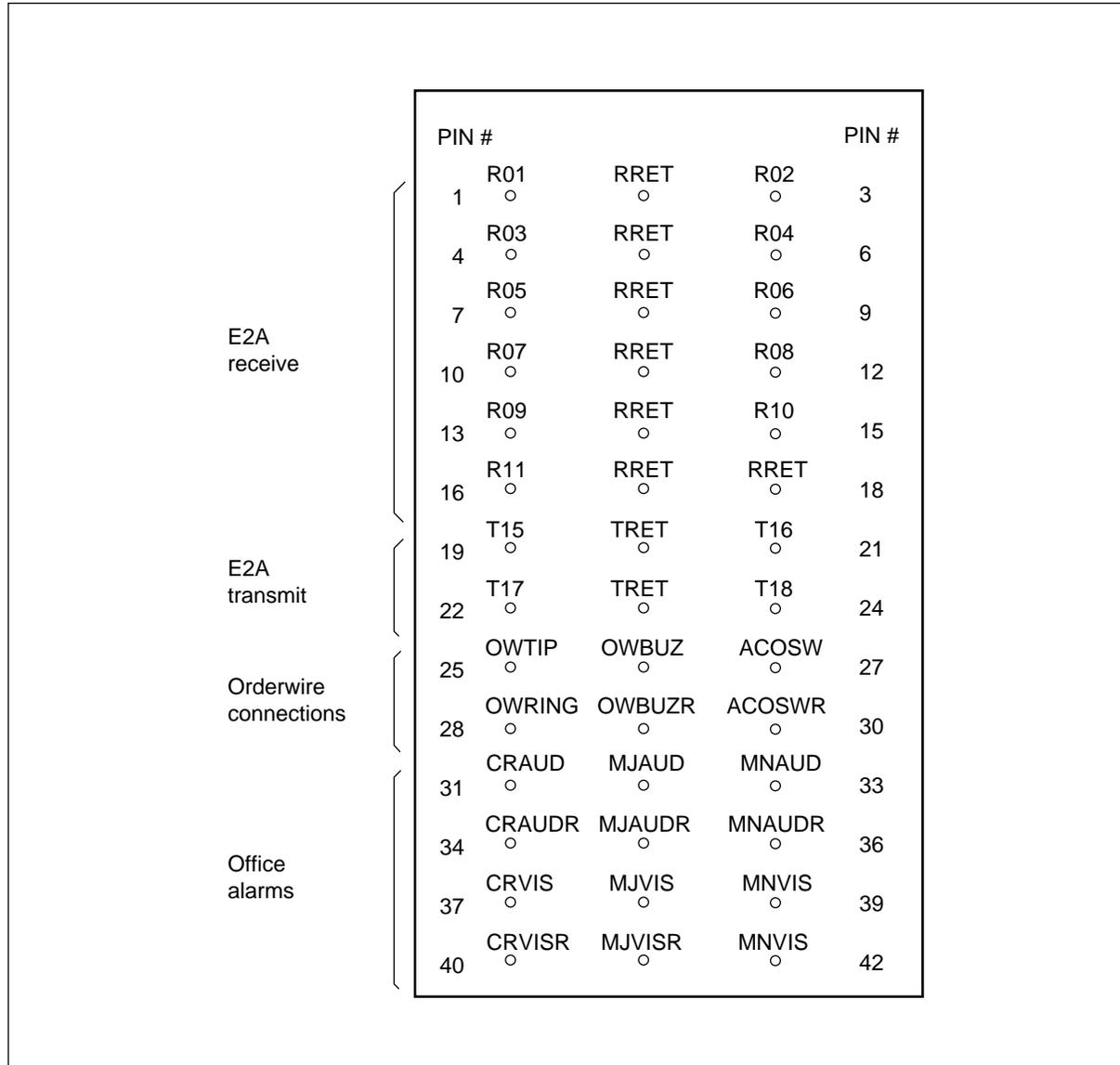
Procedure 8-2 (continued)

Wiring customer reserved optional defined external alarms

Step	Action
5	Dress and tie-wrap all installed alarm cabling.
6	Remove all combustible materials from the cabinet.

Figure 8-1
BIP wire-wrap block pin field layout and connections

FW-15150



Note: For the NT4K14BA BIP the pinfield above is rotated 90° clockwise.

—end—

Installing and connecting the batteries

This chapter describes how to install and wire batteries for the Series 800A (S800A) cabinet. The batteries can be mounted in the S800A cabinet or inside an in-pad battery vault.

The batteries are valve-regulated lead-acid cells equipped with plug-in connectors for easy installation and maintenance. They can deliver eight hours of battery reserve power at up to 350 amp-hours (Ah). See Chapter 13, “Cabinet and equipment wiring and cabling,” for more information.

Chapter task list

This chapter contains the following procedures:

Task	See
Installing 12 V batteries in a cabinet	Procedure 9-1 on page 9-4
Installing 6 V batteries in a cabinet	Procedure 9-2 on page 9-14
Wiring the cabinet when the batteries are installed in the battery vault	Procedure 9-3 on page 9-26

Note: If you cannot successfully complete a procedure, contact your next level of support.

Prerequisites for installation

The choice of site and compliance with local regulations (such as the applicable electrical codes, right-of-way easements, and noise requirements) are the responsibility of the operating company. Before you install batteries, make sure the following conditions have been met:

- The cabinet has been mounted on a concrete pad or vault as defined in Chapter 2, “Installing the cabinet.”
- All hardware and materials are available and ready for the installation.
- All required drawings, local installation instructions, job specifications, and other documentation are available and ready for use.

Battery options

Table 9-1 lists available battery options:

Table 9-1
Battery options

Battery description	PEC	CPC	Quantity
Gates, 12 V, 25 Ah Battery string	NPS25133-01L1	A0381713	1-14
YUASA, 12 V, 24 Ah Battery string	NPS25133L33	A0367999	1-14
Eagle Picher, 6 V, 53 Ah Battery string	NPS25148L3	A0379077	1-7

Battery cables

Table 9-2 lists the provisionable cables that can be ordered with the S800A outside plant (OSP) cabinet.

Table 9-2
Provisionable battery cables

Equipment description	PEC	CPC	Quantity
Battery cable No. 1, 6 V/12 V		P0731360	1
Battery cable No. 2, 6 V/12 V		P0731361	1
Battery cable No. 3, 6 V/12 V		P0731362	1
Battery cable No. 4, 6 V/12 V		P0731363	1
Battery cable No. 5, 12 V		P0731364	1
Battery cable No. 6, 12 V		P0731365	1
Battery cable No. 7, 12 V		P0731366	1
Battery cable No. 8, 12 V		P0731367	1
Battery cable No. 9, 12 V		P0731368	1
Battery cable No. 10, 12 V		P0731369	1
Battery cable No. 11, 6 V/12 V		P0731370	1
Battery cable No. 12, 6 V/12 V		P0731371	1
Battery cable No. 13	NT1W64BA	A0405013	1
Battery cable No. 14	NT1W64CA	A0405014	1
6 V battery harness adapter		PO749332	4-28

Cautions

Observe the following cautions while you perform the procedures in this chapter.



CAUTION 1
Electrical shock hazard

Disconnect any unused battery cables from the NT1W64AA battery breaker panel adapter to prevent potential electrical shock, equipment shorting, or both.



CAUTION 2
Battery string minimum requirements

Always install a minimum of three battery strings to evenly distribute the charge current among the circuit breakers of the battery breaker panel (BBP).



CAUTION 3
Battery replacement requirements

Do not replace individual battery packs. When one or more battery packs in the same string fail, replace **all** packs in that string with matched batteries having similar date codes.



CAUTION 4
Fire hazard

Remove all paper and any other combustible materials from inside a cabinet before the cabinet is powered up. Failure to comply with this warning can cause a fire.



CAUTION 5
Air flow requirement

Do not remove the air flow baffle installed in the electronics compartment. The air flow baffle directs air flow through the cabinet. The air flow baffle **must** be installed at all times during the operation of the cabinet.

Do not store objects, combustible or otherwise, in the cabinet as this can disrupt air flow.

Procedure 9-1 Installing 12 V batteries in a cabinet

Use this procedure to install 12 V lead-acid batteries in NT1W00GA/HA/JA cabinets. Follow this procedure to install batteries during the initial installation of the cabinet or to add battery strings to an operational cabinet.

Battery strings 1–12 provide at least eight hours of battery back-up for a fully configured S800A system. Battery strings 13 and 14 can provide additional battery backup power.

Note: The rectifiers can be used in battery-less operation.

Requirements

Nortel Networks recommends that the voice frequency (VF) pairs from the copper distribution shelf (CDS) to the outside plant (OSP) VF subscriber cable be in an OPEN state when you power up the CDS shelf for the first time. That is, there should be no electrical connection from the CDS to the OSP VF cable when the CDS is powered up.

You can break the CDS–OSP connection in two convenient places in the termination compartment: the VF protector blocks and the cross-connect facilities. Before you begin this procedure, open the termination compartment door and check for cross-connect wiring. If any cross-connect wiring has been installed in the termination compartment, do the following:

- Remove the VF protector modules from VF protector blocks 1–7.
- Record the VF pair numbers of the installed protectors.

After you finish this procedure, reinstall the protector modules in the same positions (indicated by the VF pair numbers) from which they were removed.

Required tools

This procedure requires a voltmeter RMS Fluke 8050A or its equivalent.

Definitions

This procedure uses the following definitions:

- battery—a single 12 V battery
- battery string—multiple batteries connected to create -48 V

—continued—

Procedure 9-1 (continued)
Installing 12 V batteries in a cabinet

Action

Step	Action
------	--------

- | | |
|---|--|
| 1 | Turn the battery breaker panel (BBP) circuit breakers to the Off position for the battery strings to be installed (see Table 9-3). |
|---|--|

Table 9-3

Battery string circuit breaker assignments

If quantity of battery strings (minimum of three) you are installing is	Then turn these BBP circuit breakers to the Off position
3	BATT 1-2, BATT 3-4, BATT 5-6
4	BATT 1-2, BATT 3-4, BATT 5-6, BATT 7-8
5	BATT 1-2, BATT 3-4, BATT 5-6, BATT 7-8, BATT 9-10
6	BATT 1-2, BATT 3-4, BATT 5-6, BATT 7-8, BATT 9-10, BATT 11-12
7	BATT 1-2, BATT 3-4, BATT 5-6, BATT 7-8, BATT 9-10, BATT 11-12, BATT 13-14
8	BATT 1-2, BATT 3-4, BATT 5-6, BATT 7-8
9	BATT 1-2, BATT 3-4, BATT 5-6, BATT 7-8, BATT 9-10
10	BATT 1-2, BATT 3-4, BATT 5-6, BATT 7-8, BATT 9-10
11	BATT 1-2, BATT 3-4, BATT 5-6, BATT 7-8, BATT 9-10, BATT 11-12
12	BATT 1-2, BATT 3-4, BATT 5-6, BATT 7-8, BATT 9-10, BATT 11-12
13	BATT 1-2, BATT 3-4, BATT 5-6, BATT 7-8, BATT 9-10, BATT 11-12, BATT 13-14
14	BATT 1-2, BATT 3-4, BATT 5-6, BATT 7-8, BATT 9-10, BATT 11-12, BATT 13-14

—continued—

9-6 Installing and connecting the batteries

Procedure 9-1 (continued)

Installing 12 V batteries in a cabinet

Step	Action
2	Measure the voltage between the terminals of each new battery pack (see Table 9-4).

Table 9-4
Battery voltage check requirements

If the battery type is	Then the voltage reading must be
YUASA, 12 V dc	≥11.5 V dc on each 12 V battery
Gates, 12 V dc	≥11.5 V dc on each 12 V battery

- 3 Replace any battery pack set that does not meet the requirements in Table 9-4. See CAUTION 3 on page 9-3.
- 4 Install, but do not connect, the battery strings. See Table 9-5.
Note: Each string consists of four 12 V dc battery packs.

Table 9-5
12 V battery string placement in the cabinet

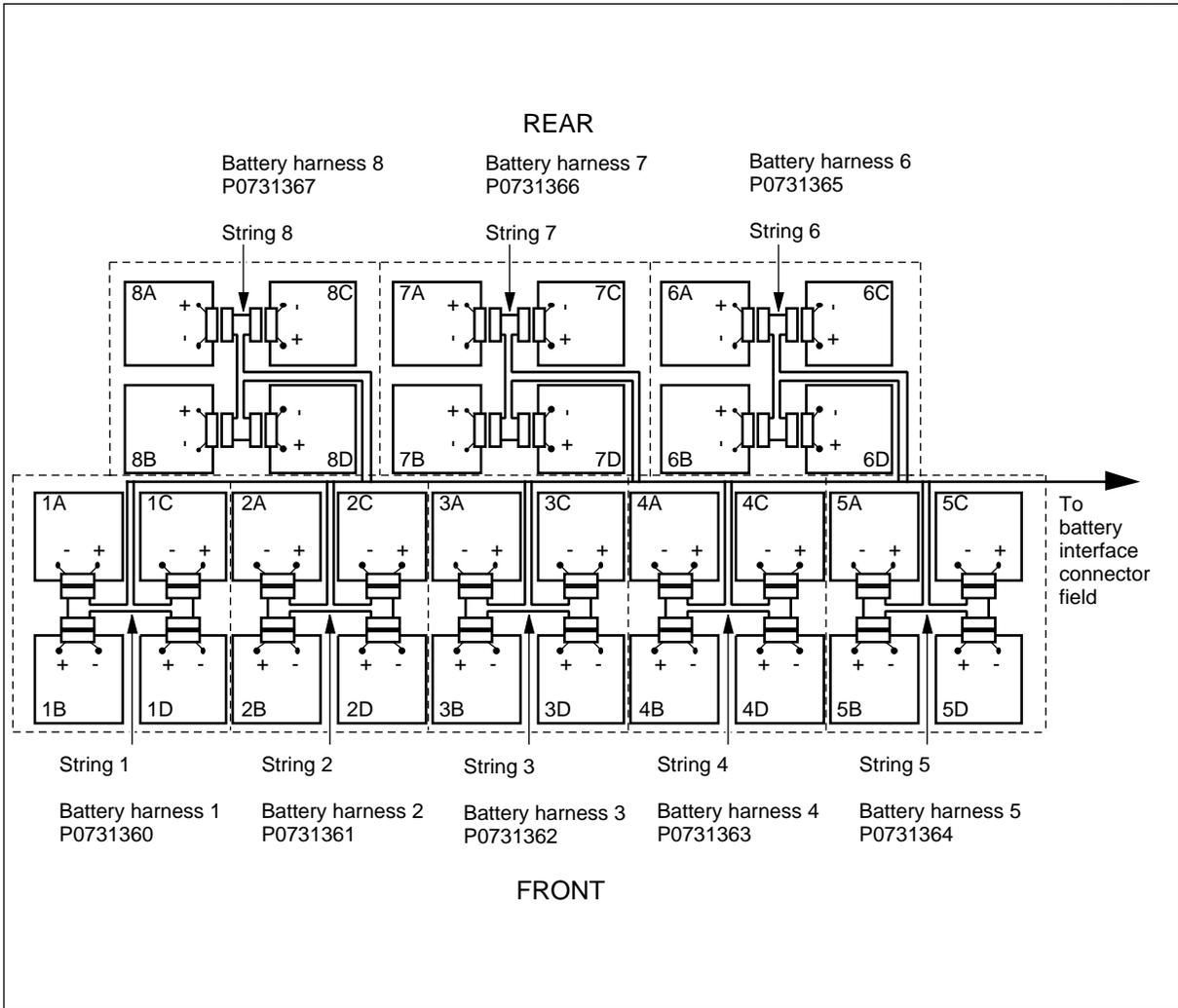
Battery string	Placement
1-8	Place at the bottom of the cabinet as shown in Figure 9-1 on page 9-7.
9-14	Mount on the battery shelves as shown in Figure 9-2 on page 9-8.

—continued—

Procedure 9-1 (continued)
Installing 12 V batteries in a cabinet

Figure 9-1
Battery string (1-8) arrangement for 12 V batteries on the cabinet floor

FW-15152



—continued—

9-8 Installing and connecting the batteries

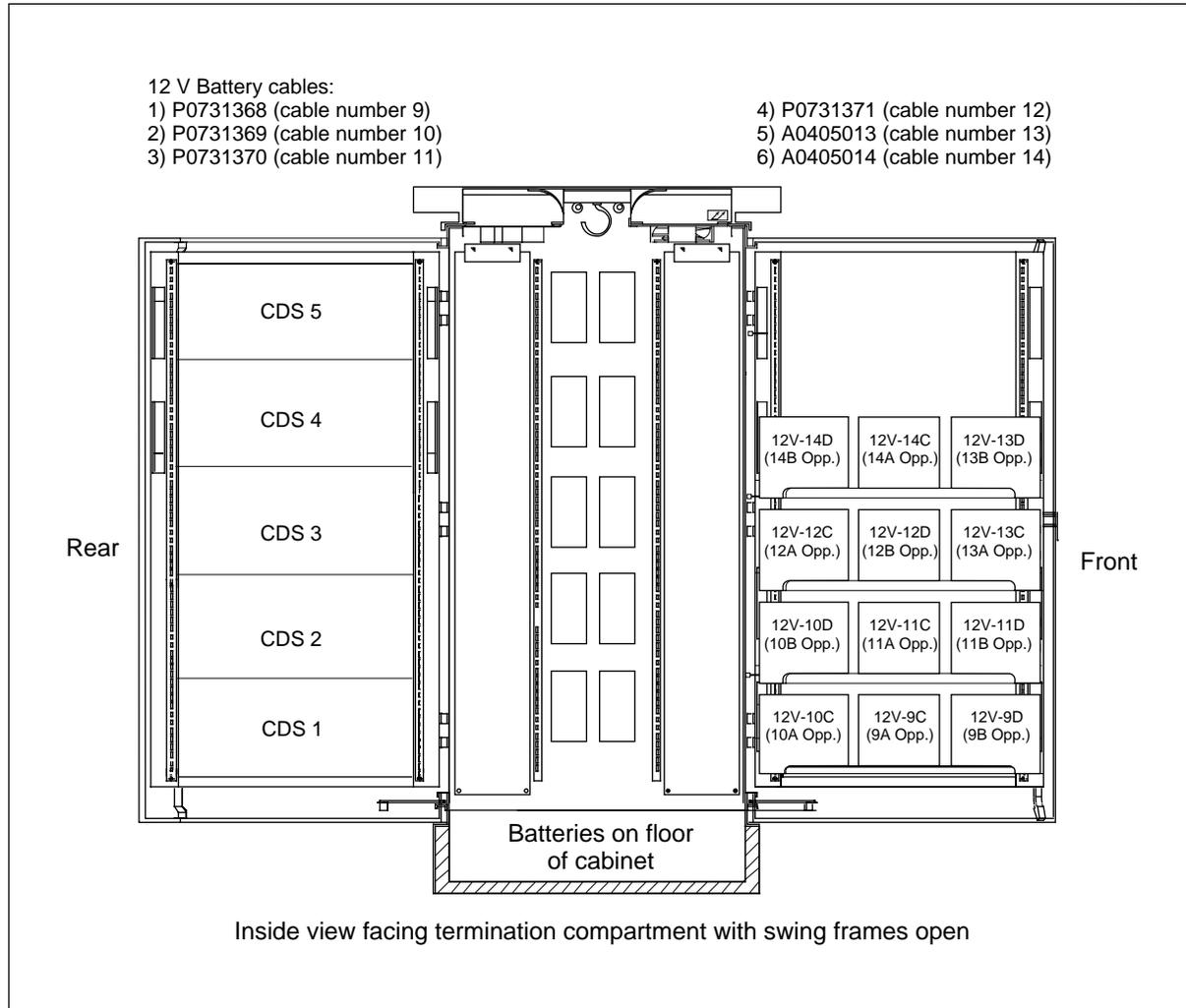
Procedure 9-1 (continued)

Installing 12 V batteries in a cabinet

Figure 9-2

Battery string (9–14) arrangement for 12 V batteries in a swing frame

FW-16033



—continued—

Procedure 9-1 (continued)
Installing 12 V batteries in a cabinet

Step	Action
5	Install the battery strap installation kit (see Figure 9-3) onto the battery shelves for Zone 4 earthquake applications.
6	Verify that circuit breakers BATT 1-2 through BATT 13-14 on the battery breaker panel (BBP) are all in the Off position.

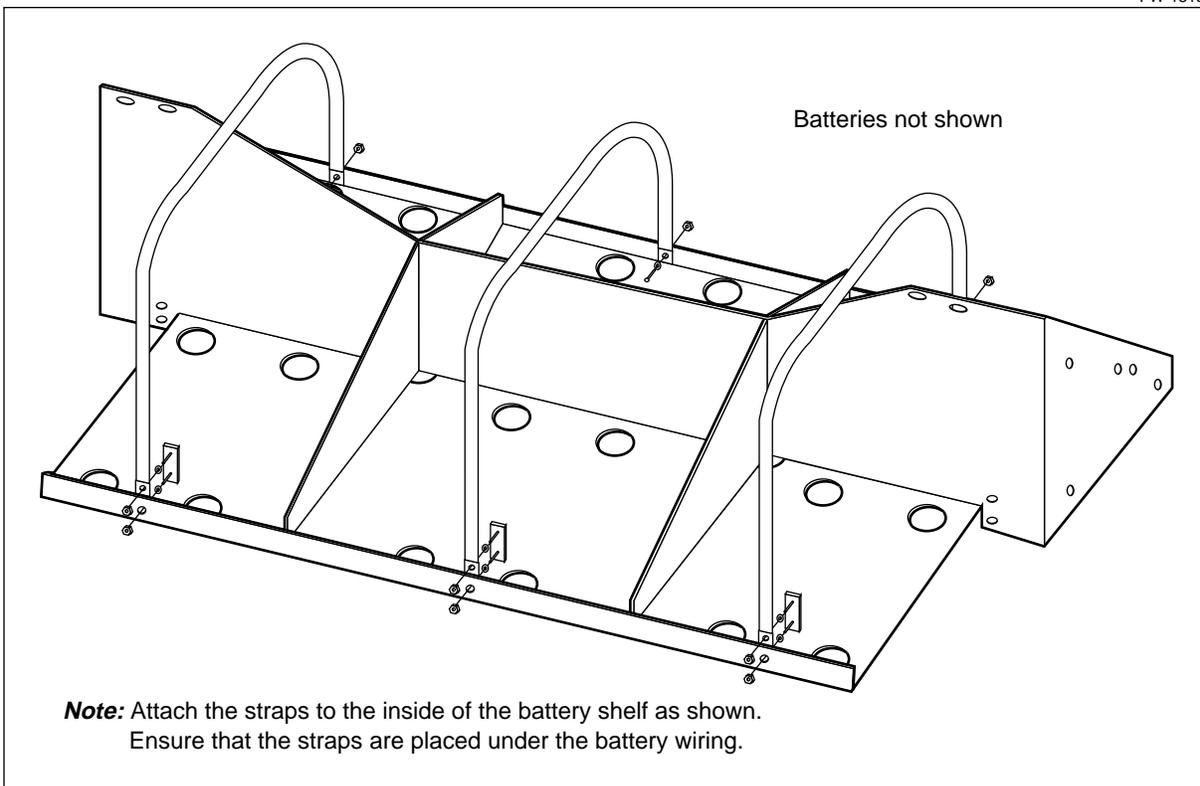


CAUTION 6
Current inrush hazard

To avoid current inrush from one battery string, always turn the battery string circuit breakers (BATT 1-2 through BATT 13-14) on the BBP to the Off position before connecting the battery cable assemblies to the BBP interface connectors on the rear left swing frame.

Figure 9-3
Optional battery strap installation kit for Zone 4 application

FW-15154



—continued—

9-10 Installing and connecting the batteries

Procedure 9-1 (continued)

Installing 12 V batteries in a cabinet

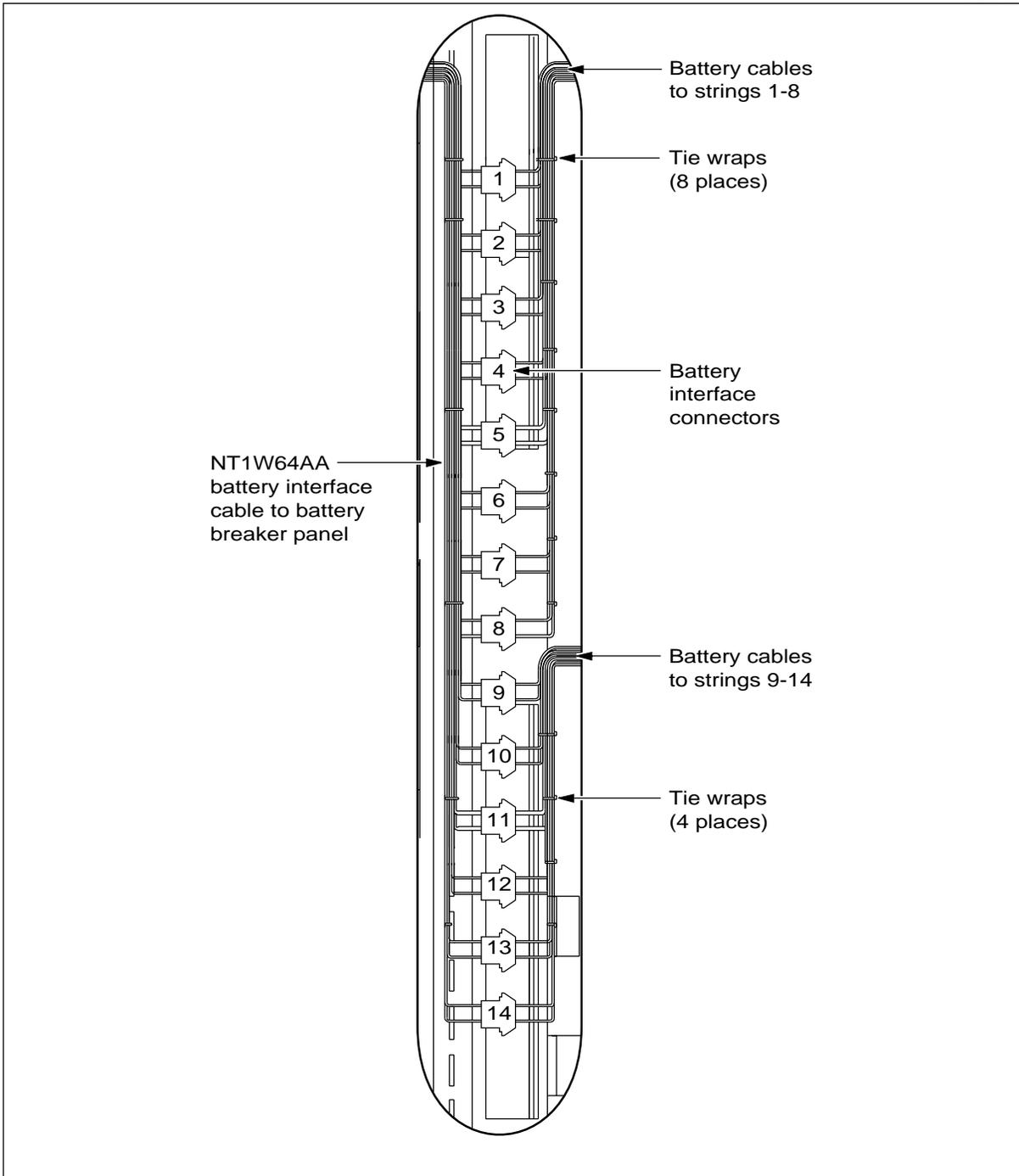
Step	Action
7	Disconnect all battery harnesses from the battery interface connector field (see Figure 9-4 on page 9-11). The battery interface connector field is at the bottom right rear of the rear left swing frame containing the rectifier shelf and the dc distribution shelf.
8	Connect the batteries installed in step 4 to the connectorized battery harness at the battery end. Note: Each battery harness is labeled to correspond to the correct battery string.
9	Dress the battery harnesses into the battery compartment (see Figure 9-1 on page 9-7 and Figure 9-2 on page 9-8). Dress the harnesses between the batteries so that the cables are secure, free of kinks and twists, and do not catch or snag on the equipment swing frame as it closes.
10	Check the voltage (-48 V dc) on each connector. The connectors are at the end of the cable assembly at the battery interface connector field. Note: If a connector or battery harness proves faulty (no voltage at the BBP end), replace the cable assembly and check again for cable integrity.

—continued—

Procedure 9-1 (continued)
Installing 12 V batteries in a cabinet

Figure 9-4
Battery interface connector field on swing frame for 12 V battery cabling

FW-15155



—continued—

9-12 Installing and connecting the batteries

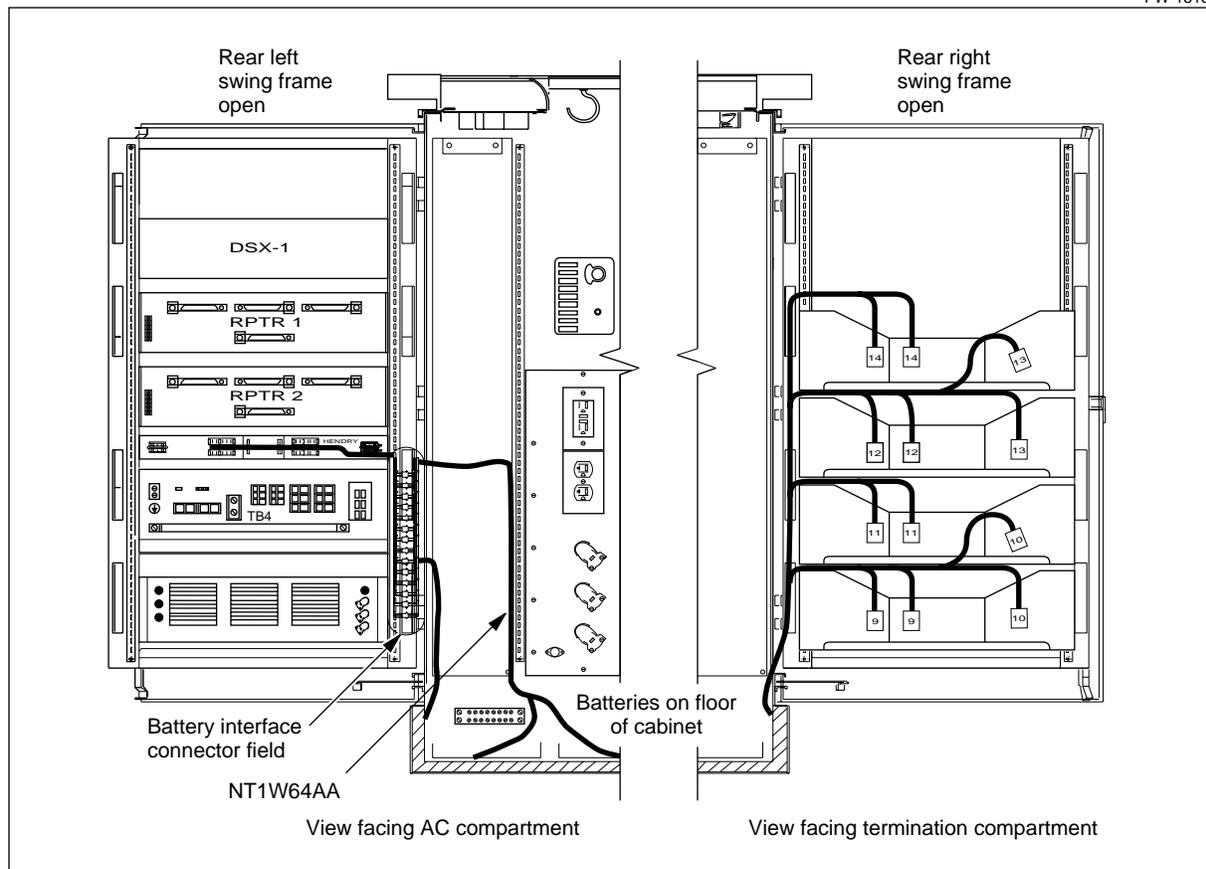
Procedure 9-1 (continued)

Installing 12 V batteries in a cabinet

Step	Action
11	Route, but do not connect, the BBP ends of the battery cables to the battery interface connector field on the rear left swing frame. Secure the cables to the swing frame with tie wraps (see Figure 9-5).

Figure 9-5
12 V battery cable routing

FW-15156



—continued—

Procedure 9-1 (continued)

Installing 12 V batteries in a cabinet

Step	Action
12	<p>Connect the battery string cable assemblies to the corresponding connector on the battery interface connector field (see Figure 9-4 on page 9-11).</p> <p>Note 1: The battery string numbers are labeled on each battery harness to correspond to the connections on the BBP adapter.</p> <p>Note 2: If the number of battery strings (minimum of three) to be installed is 3, 4 or 5, then each battery string must be connected to an odd numbered battery interface connector field position (1, 3, 5, 7 and 9). The even numbered connector positions (2, 4, 6, 8 and 10) must be insulated (completely covered) with heat-shrinkable tubing.</p>
13	<p>Turn circuit breakers BATT 1-2 and BATT 13-14 to the On position on the BBP. See Table 9-6.</p>

Table 9-6

Battery string circuit breaker assignments for 12 V batteries

If quantity of battery strings you have installed is	Then connect the battery strings (in sequence) to battery interface connector positions
3	1, 3, 5
4	1, 3, 5, 7
5	1, 3, 5, 7, 9
6	1, 3, 5, 7, 9, 11
7	1, 3, 5, 7, 9, 11, 13
8	1, 2, 3, 5, 7, 9, 11, 13
9	1, 2, 3, 4, 5, 7, 9, 11, 13
10	1-7, 9, 11, 13
11	1-9, 11, 13
12	1-11, 13
13	1-13
14	1-14

—end—

Procedure 9-2

Installing 6 V batteries in a cabinet

Use this procedure to install 6 V lead-acid batteries in NT1W00GA/HA/JA cabinets. Follow the procedure to install batteries during the initial installation of the cabinet or to add battery strings to an operational cabinet.

Battery strings 1–6 provide at least eight hours of battery backup for a fully configured S800A system. Battery string 7 can provide additional battery backup power.

Note: The rectifiers can be used in battery-less operation.

Requirements

Nortel Networks recommends that the voice frequency (VF) pairs from the copper distribution shelf (CDS) to the outside plant (OSP) VF subscriber cable be in an OPEN state when you power up the CDS shelf for the first time. That is, there should be no electrical connection from the CDS to the OSP VF cable when the CDS is powered up.

You can break the CDS–OSP connection in two convenient places in the termination compartment: the VF protector blocks and the cross-connect facilities. Before you begin this procedure, open the termination compartment door and check for cross-connect wiring. If any cross-connect wiring has been installed in the termination compartment, do the following:

- Remove the VF protector modules from VF protector blocks 1–7.
- Record the VF pair numbers of the installed protectors.

After you finish this procedure, reinstall the protector modules in the same positions (indicated by the VF pair numbers) from which they were removed.

Required tools

This procedure requires a voltmeter RMS Fluke 8050A or its equivalent.

Definitions

This procedure uses the following definitions:

- battery—a single 6 V battery
- battery string—multiple batteries connected to create -48 V

—continued—

Procedure 9-2 (continued)
Installing 6 V batteries in a cabinet

Action

Step	Action
------	--------

- | | |
|---|--|
| 1 | Turn the battery breaker panel (BBP) circuit breakers to the OFF position for the battery strings to be installed (see Table 9-7). |
|---|--|

Table 9-7

Battery string circuit breaker assignments for 6 V batteries

If quantity of battery strings (minimum of three) you are installing is	Then turn these BBP circuit breakers to the OFF position
3	BATT 1-2, BATT 3-4, BATT 5-6
4	BATT 1-2, BATT 3-4, BATT 5-6, BATT 7-8
5	BATT 1-2, BATT 3-4, BATT 5-6, BATT 7-8, BATT 9-10
6	BATT 1-2, BATT 3-4, BATT 5-6, BATT 7-8, BATT 9-10, BATT 11-12
7	BATT 1-2, BATT 3-4, BATT 5-6, BATT 7-8, BATT 9-10, BATT 11-12, BATT 13-14

- | | |
|---|---|
| 2 | Measure the voltage between the terminals of each new battery pack (see Table 9-8). |
|---|---|

Table 9-8

6 V battery voltage check requirements

If the battery type is	Then the voltage reading must be
Eagle-Picher, 6 V dc	≥ 5.75 V dc on each 6 V battery

—continued—

9-16 Installing and connecting the batteries

Procedure 9-2 (continued)

Installing 6 V batteries in a cabinet

- | Step | Action |
|-------------|---|
| 3 | Replace any battery pack set that does not meet the requirements in Table 9-8. See CAUTION 3 on page 9-3. |
| 4 | Install, but do not connect, the battery strings (see Table 9-9).
Note: Each string consists of eight 6 V dc battery packs. |

Table 9-9
6 V battery string placement in the cabinet

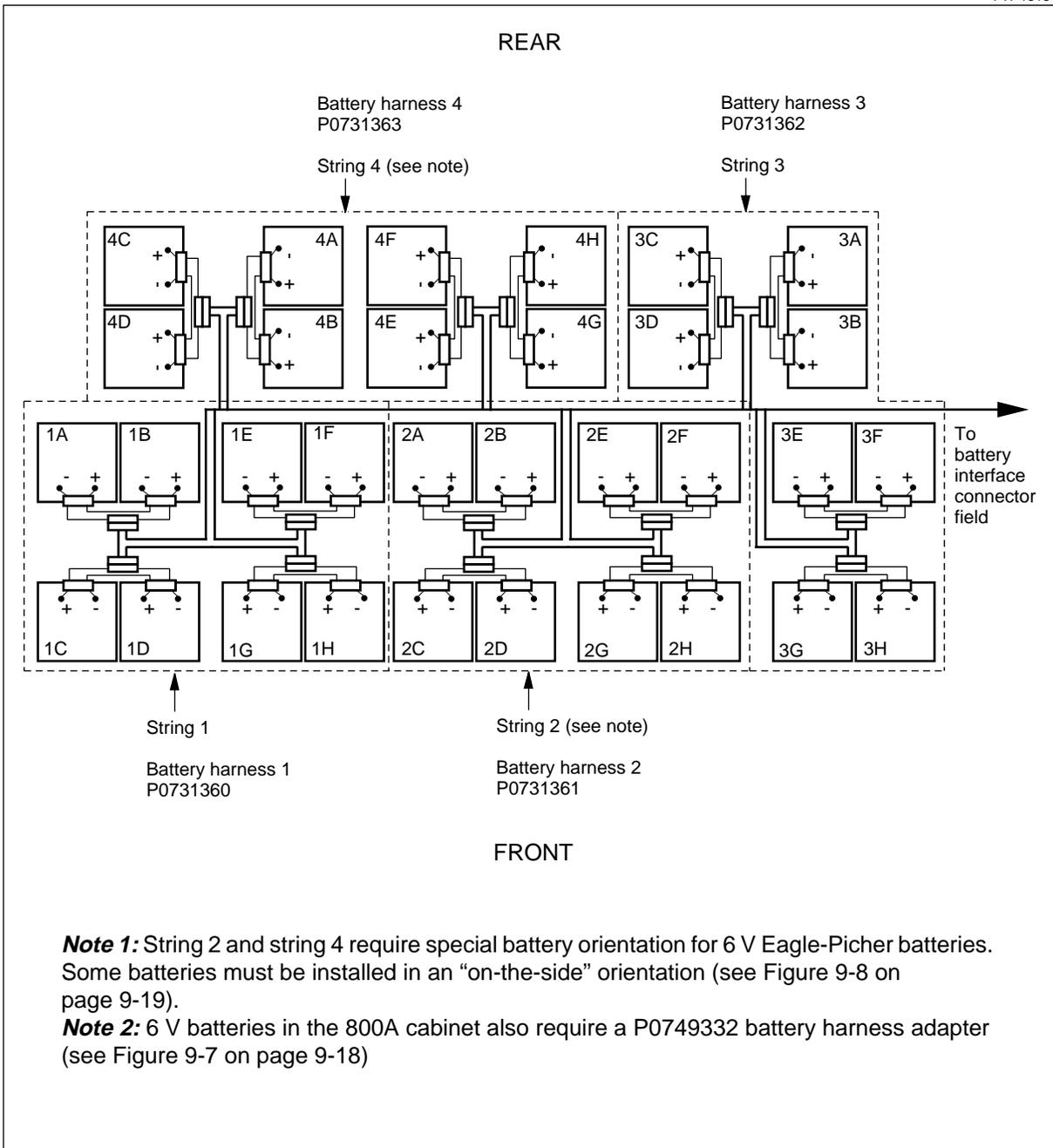
Battery string	Placement
1-4	Place at the bottom of the cabinet as shown in Figure 9-6 on page 9-17 (Eagle-Picher batteries require special installation orientation. See Figure 9-6 on page 9-17 and Figure 9-8 on page 9-19 for detailed battery orientation information).
5-7	Mount on the battery shelves as shown in Figure 9-9 on page 9-20.

—continued—

Procedure 9-2 (continued)
Installing 6 V batteries in a cabinet

Figure 9-6
Battery string (1-4) arrangement for 6 V batteries on the cabinet floor

FW-15151



—continued—

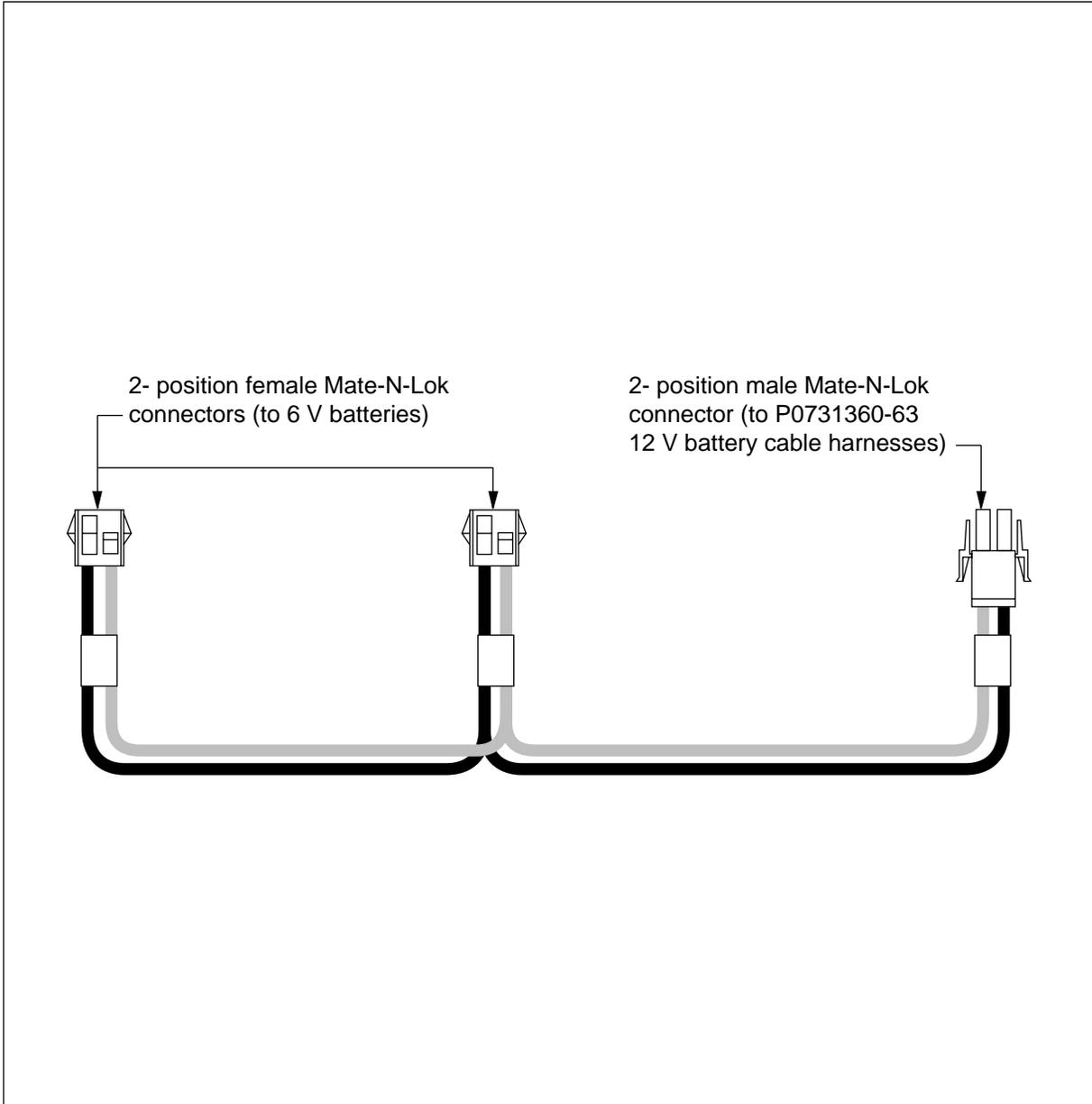
9-18 Installing and connecting the batteries

Procedure 9-2 (continued)

Installing 6 V batteries in a cabinet

Figure 9-7
P0749332 battery harness adapter for use with 6 V batteries

FW-15748

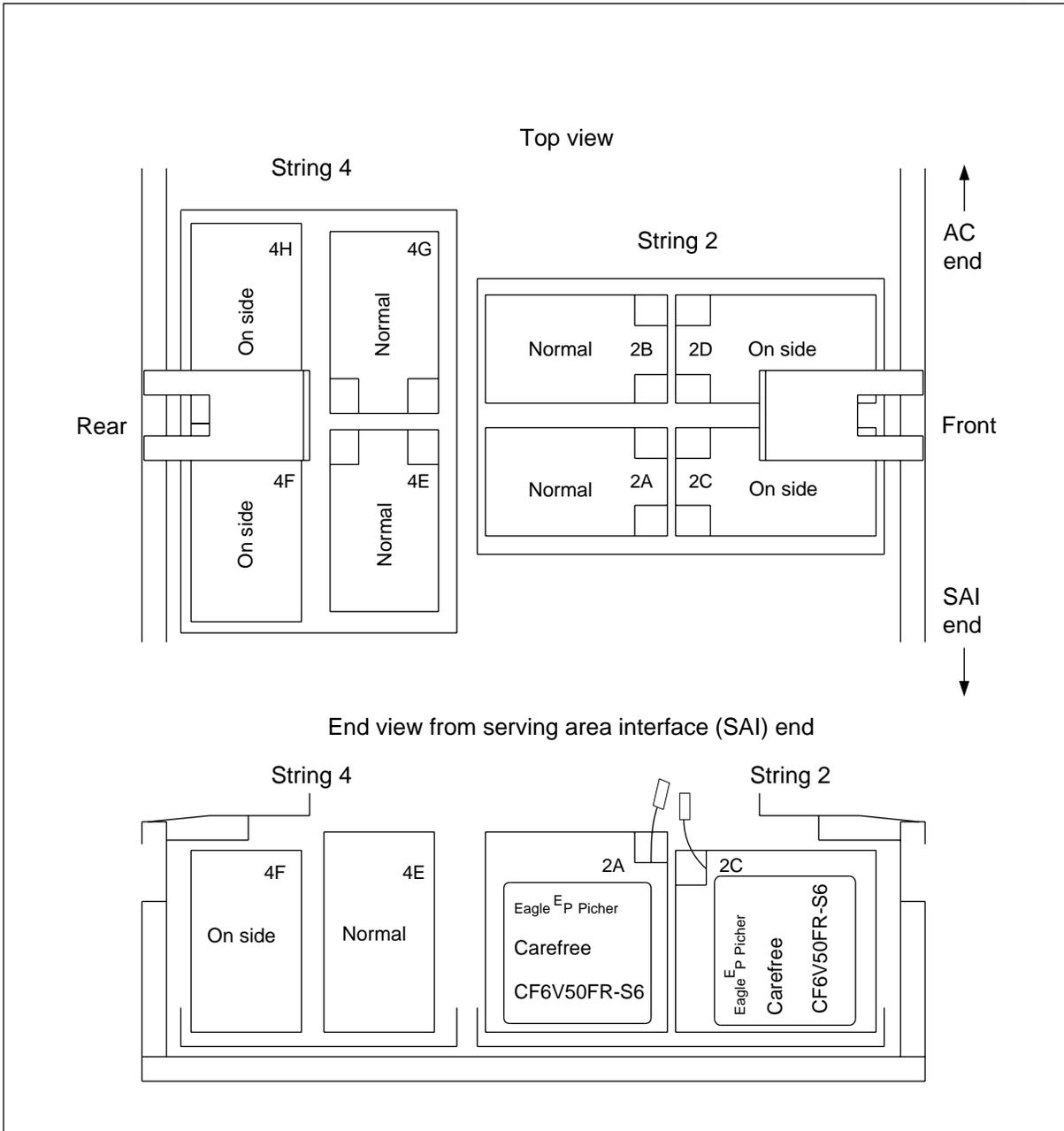


—continued—

Procedure 9-2 (continued)
Installing 6 V batteries in a cabinet

Figure 9-8
Eagle-Picher battery string (1-4) arrangement for 6 V batteries on the cabinet floor

FW-15081



—continued—

9-20 Installing and connecting the batteries

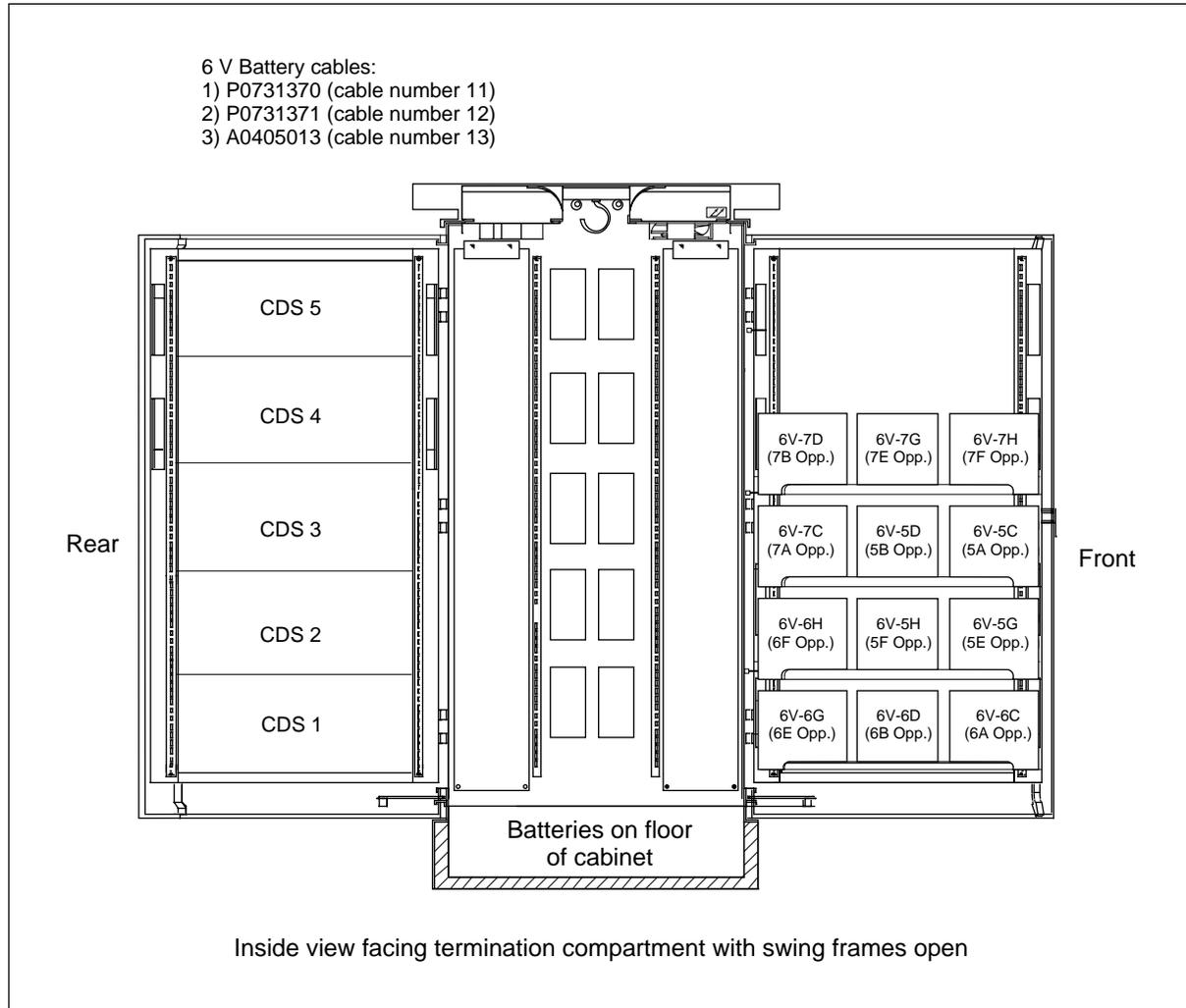
Procedure 9-2 (continued)

Installing 6 V batteries in a cabinet

Figure 9-9

Battery string arrangement for 6 V batteries in a swing frame

FW-116034



—continued—

Procedure 9-2 (continued)
Installing 6 V batteries in a cabinet

Step	Action
5	Install the battery strap installation kit (see Figure 9-10) onto the battery shelves for Zone 4 earthquake applications.
6	Make sure circuit breakers BATT 1-2 through BATT 13-14 on the battery breaker panel (BBP) are all in the Off position.

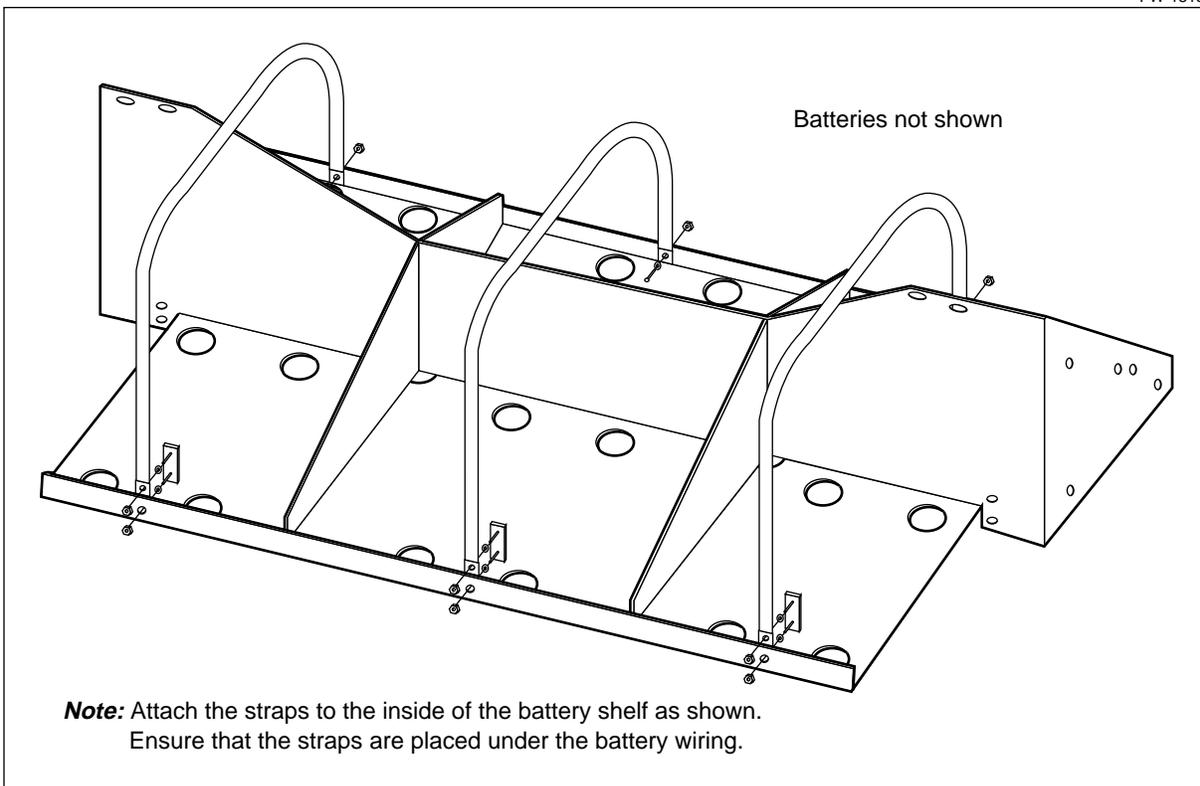


CAUTION 6
Current inrush hazard

To avoid current inrush from one battery string, always turn the battery string circuit breakers (BATT 1-2 through BATT 13-14) on the BBP to the Off position before connecting the battery cable assemblies to the BBP interface connectors on the rear left swing frame.

Figure 9-10
Optional battery strap installation kit for Zone 4 application

FW-15154



—continued—

9-22 Installing and connecting the batteries

Procedure 9-2 (continued)

Installing 6 V batteries in a cabinet

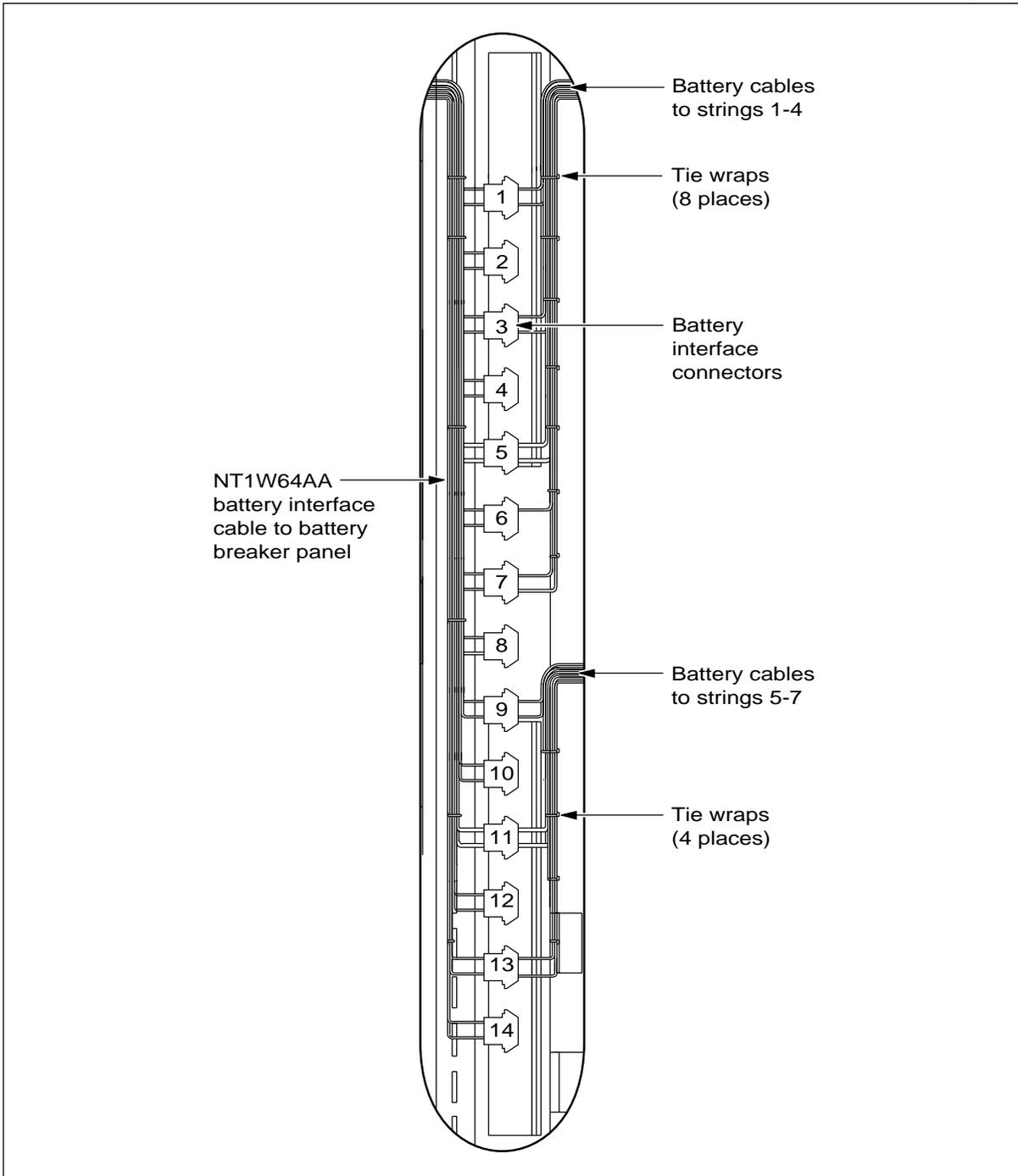
Step	Action
7	Disconnect all battery harnesses from the battery interface connector field (see Figure 9-11 on page 9-23). The battery interface connector field is at the bottom right rear of the rear left swing frame containing the rectifier shelf and the dc distribution shelf.
8	Connect the batteries installed in step 4 to the connectorized battery harness at the battery end. Note 1: Each battery harness is labeled to correspond to the correct battery string. Note 2: For 6 V batteries, you need one battery harness adapter (P0749332) for each cable harness to split the connections from 4 to 8. See Figure 9-7 on page 9-18.
9	Dress the battery harnesses into the battery compartment (see Figure 9-6 on page 9-17 and Figure 9-9 on page 9-20). Dress the harnesses between the batteries so that the cables are secure, free of kinks and twists, and do not catch or snag on the equipment swing frame as it closes.
10	Check the voltage (-48 V dc) on each connector. The connectors are at the end of the cable assembly at the battery interface connector field. Note: If a connector or battery harness proves faulty (no voltage at the BBP end), replace the cable assembly and check again for cable integrity.

—continued—

Procedure 9-2 (continued)
Installing 6 V batteries in a cabinet

Figure 9-11
Battery interface connector field on swing frame for 6 V battery cabling

FW-160355



—continued—

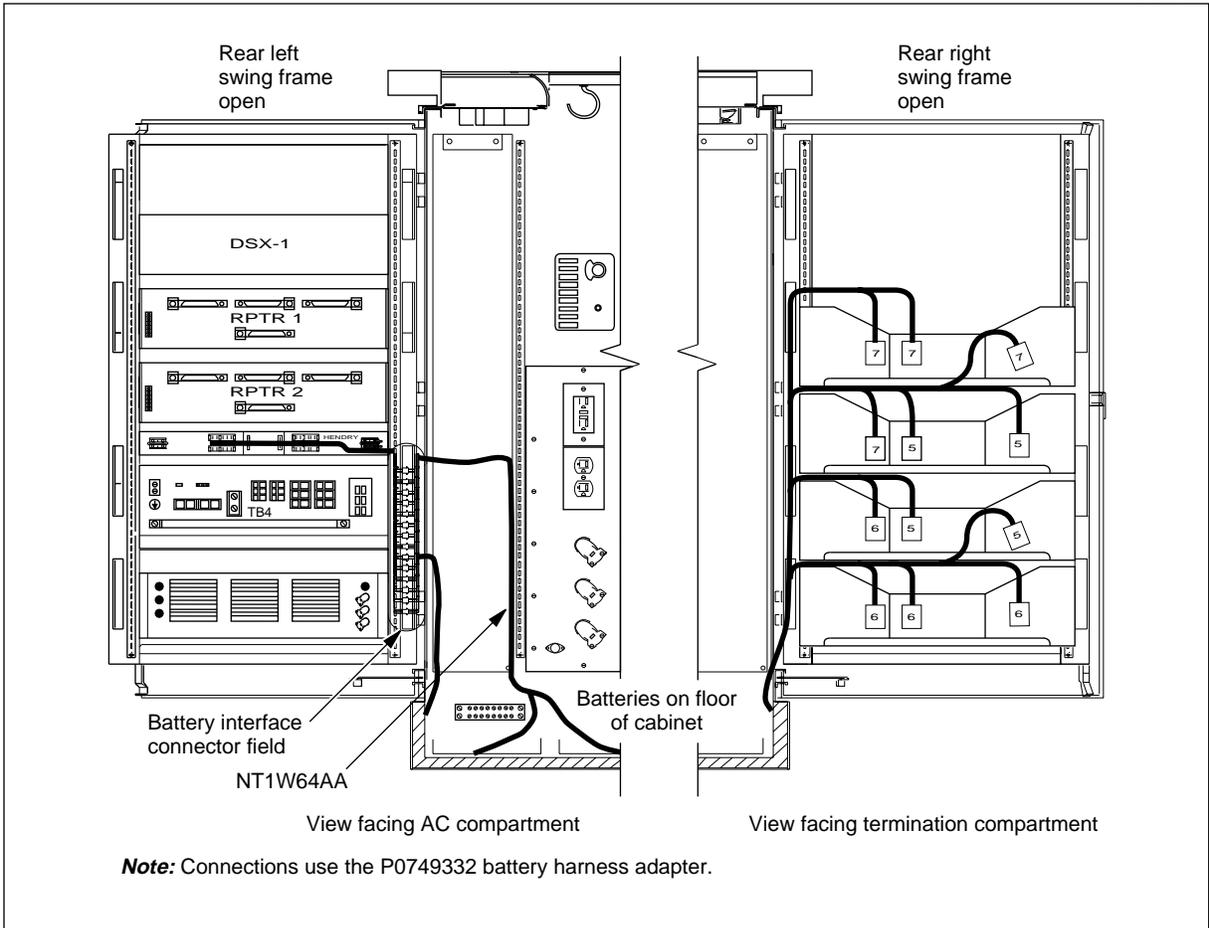
9-24 Installing and connecting the batteries

Procedure 9-2 (continued)
Installing 6 V batteries in a cabinet

Step	Action
11	Route, but do not connect, the BBP ends of the battery cables to the battery interface connector field on the rear left swing frame. Secure the cables to the swing frame with tie wraps (see Figure 9-12).

Figure 9-12
6 V battery cable routing

FW-16036



—continued—

 Procedure 9-2 (continued)

Installing 6 V batteries in a cabinet

- | Step | Action |
|------|--|
| 12 | Connect the battery string cable assemblies to the corresponding connector on the battery interface connector field (see Figure 9-11 on page 9-23).

Note 1: The battery string numbers are labeled on each battery harness to correspond to the connections on the BBP adapter.

Note 2: If the number of battery strings (minimum of three) to be installed is 3, 4 or 5, then each battery string must be connected to an odd numbered battery interface connector field position (1, 3, 5, 7 and 9). The even numbered connector positions (2, 4, 6, 8 and 10) must be insulated (completely covered) with heat-shrinkable tubing. |
| 13 | Turn circuit breakers BATT 1-2 through BATT 13–14 to the On position on the BBP. See Table 9-10. |

Table 9-10**Battery string circuit breaker assignments for 6 V batteries**

If quantity of battery strings you have installed is	Then connect the battery strings (in sequence) to battery interface connector positions
3	1, 3, 5
4	1, 3, 5, 7
5	1, 3, 5, 7, 9
6	1, 3, 5, 7, 9, 11
7	1, 3, 5, 7, 9, 11, 13

—end—

Procedure 9-3

Wiring the cabinet when the batteries are installed in the battery vault

Use this procedure to connect batteries to the NT1W00DA/EA/FA cabinets when the batteries are mounted in the NT1W52 battery vault.

Note: Customers define the types of batteries to be installed and the battery mounting procedures for installing batteries in the vault. They may differ with each installation.

Requirements

This procedure requires the following equipment:

- voltmeter RMS Fluke 8050A (or equivalent)
- wire stripper for 6 AWG cable
- terminal lug crimping tool for 6 AWG terminal lugs

Action

Step	Action
1	Turn the battery circuit breakers in the battery vault to the OFF position.
2	Route the battery cables from the vault into the cabinet to TB13 as shown in Figure 9-13 on page 9-27.

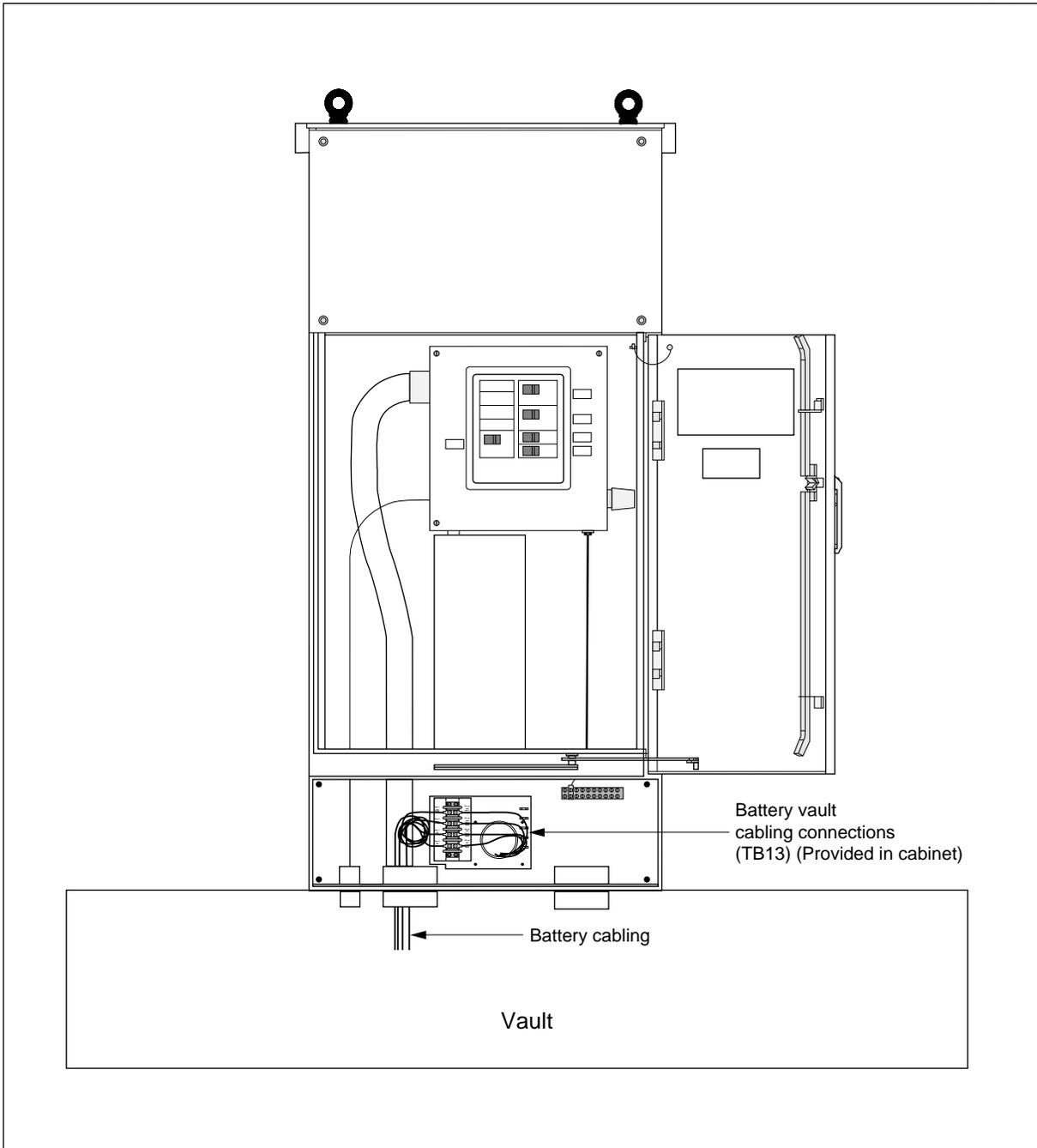
—continued—

Procedure 9-3 (continued)

Wiring the cabinet when the batteries are installed in the battery vault

Figure 9-13
Battery cable routing from the vault to the cabinet

FW-15036



—continued—

9-28 Installing and connecting the batteries

Procedure 9-3 (continued)

Wiring the cabinet when the batteries are installed in the battery vault

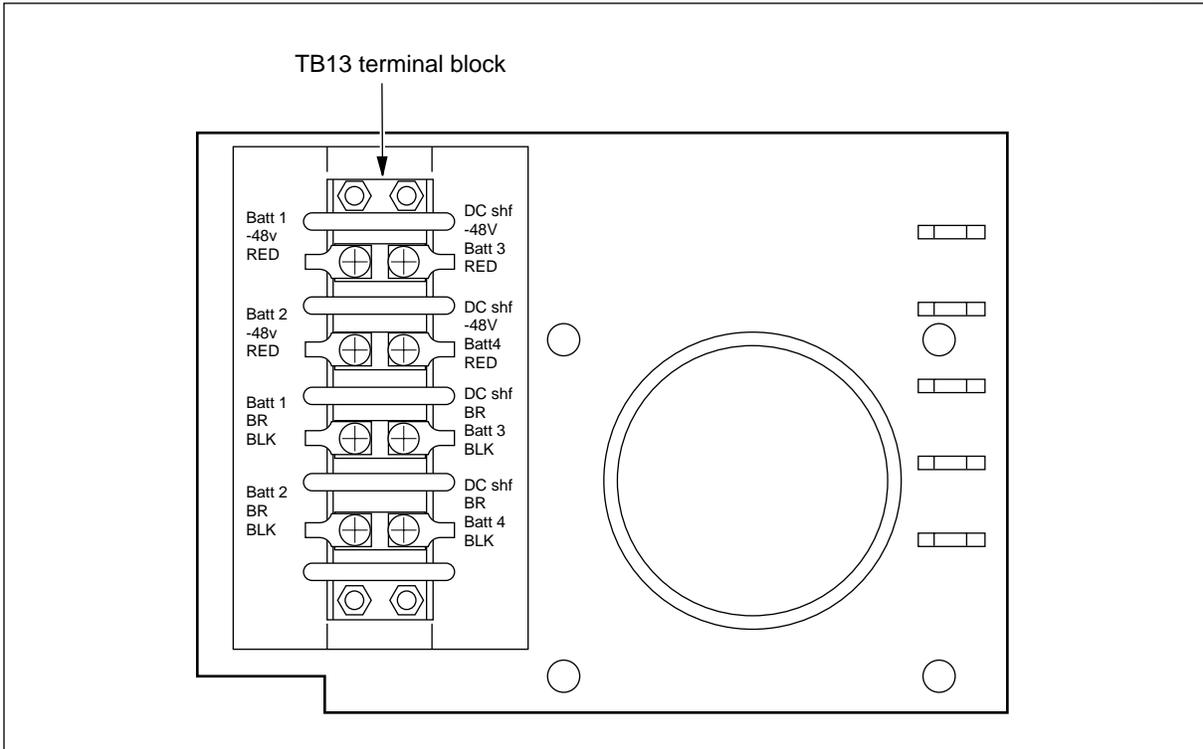
- | Step | Action |
|------|--|
| 3 | Strip the battery cable ends approximately 1/2 in. (1.27 cm) and crimp 6 AWG terminal lugs onto each battery cable lead. |
| 4 | Connect the battery cable lugs to TB13 as shown in Table 9-11 and Figure 9-14. |

Table 9-11
Battery lead connections to TB13

Battery lead	TB13 terminal designation
Battery 1 (RED)	TB1, DC shf -48V Batt 3 (RED)
Battery 2 (RED)	TB2, DC shf -48V Batt 4 (RED)
Battery 1 Return (BLK)	TB3, DC shf BR Batt 3 (BLK)
Battery 2 Return (BLK)	TB4, DC shf BR Batt 4 (BLK)

Figure 9-14
TB13 close-up view

FW-15157



—continued—

Procedure 9-3 (continued)

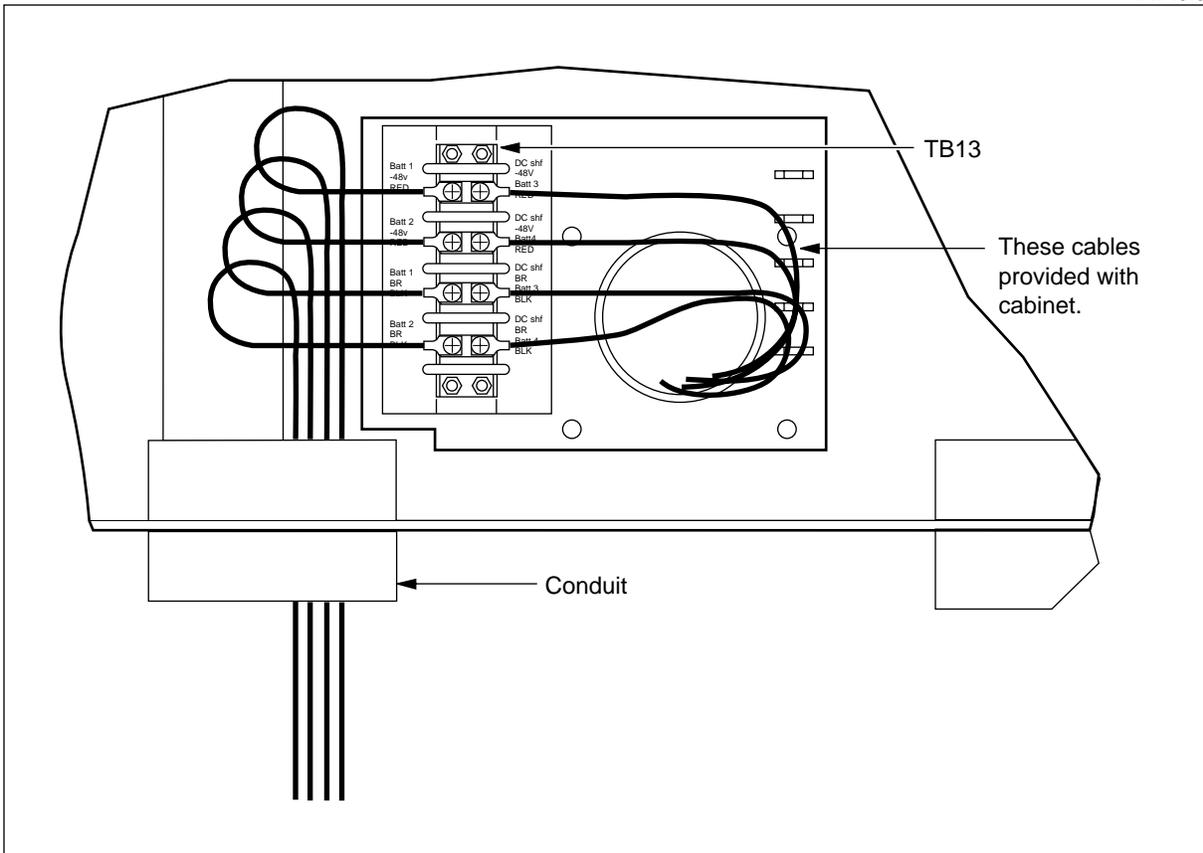
Wiring the cabinet when the batteries are installed in the battery vault

Step	Action
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5	Dress the battery cabling as shown in Figure 9-15.
---	--

Figure 9-15
TB13 battery cable wiring connections

FW-15158



—end—

Adjusting the rectifier and the dc distribution shelf

This section provides installation procedures for the installation and turn-up of the modular power rectifier (MPR) 25 rectifiers in the S800A cabinet.

If only one rectifier is installed, perform Procedure 10-1 through Procedure 10-4 on page 10-16 for rectifier adjustments and perform Procedure 10-7 on page 10-23 through Procedure 10-10 on page 10-30 for dc distribution shelf adjustments. If more than one rectifier is installed, perform all of the procedures in the order presented.

How to use this chapter

In the following table, you will find a list of the procedures adjusting the rectifiers and dc distribution shelf for the AccessNode S800A Outside Plant (OSP) cabinet. Perform the procedures in the order listed. If you cannot successfully complete these procedures, contact your next level of support.

Chapter task list

Task	See
Power the rectifier	Procedure 10-1 on page 10-4
Adjust the High Voltage Shutdown (HVSD)	Procedure 10-2 on page 10-11
Adjust the Equalize (EQL) voltage	Procedure 10-3 on page 10-14
Adjust the Float (FLT) voltage	Procedure 10-4 on page 10-16
Adjust the second and third rectifiers	Procedure 10-5 on page 10-18
Adjust the load sharing for multiple rectifiers	Procedure 10-6 on page 10-20
Adjust the dc distribution shelf voltages	Procedure 10-7 on page 10-23
Adjust the low voltage alarm (LVA) threshold on the dc distribution shelf	Procedure 10-8 on page 10-26
Adjust the low voltage disconnect (LVD) threshold on the dc distribution shelf	Procedure 10-9 on page 10-28
Adjust the low voltage disconnect return (LVDR) threshold on the dc distribution shelf	Procedure 10-10 on page 10-30

Prerequisites for installation

The choice of site and compliance with local regulations (such as the applicable electrical codes, right-of-way easements, and noise requirements) are the responsibility of the operating company.

- The cabinet has been mounted on the selected concrete pad or battery vault as defined in Chapter 2, “Installing the cabinet”.
- All hardware and materials are available, and have been checked for completeness and readiness for the installation.
- All the required drawings, local installation instructions, job specifications, and other documentation are available and ready for use.
- The required 220 V ac line voltage is feeding the cabinet.
- Batteries have been installed (see Chapter 9, “Installing and connecting the batteries”).

Cautions

Prior to performing any rectifier replacement procedures, read each caution on the following page carefully. Important battery and rectifier information is presented.

	<p>CAUTION 1 Air flow requirements Do not leave any materials or other objects lying over the batteries or in other parts of the cabinet. This could block air flow throughout the cabinet and disrupt cabinet cooling.</p>
---	---

**CAUTION 2****Electrical shock hazard**

Perform the steps in the order shown because the sequence of turning the breakers on and off is critical.

**CAUTION 3****Test the output dc voltage levels**

If this is a new installation, the dc voltage output level from each rectifier module *must* be tested and adjusted as per Nortel Networks recommended float voltages for the battery manufacturers listed below.

Eagle-Picher 6V: -54.70 ± 0.10 V dc

Gates 12V: -55.00 ± 0.10 V dc

Yuasa 12V: -54.00 ± 0.10 V dc

Note: These ranges are subject to change without notice. For other battery manufacturers, reference CAUTION 4.

**CAUTION 4****DC voltage input requirements**

The AccessNode input voltage specifications require that the dc input to the BIP does not exceed -56.0 V dc. Battery float, equalize and high voltage shutdown levels *must* be set below this maximum regardless of the type of batteries installed.

**CAUTION 5****Circuit breaker verification**

Because there are circuit breakers on the ac service panel, rectifier modules, and the battery breaker panel (BBP), use caution before switching a circuit breaker. Make sure you are switching the correct one.

**CAUTION 6****Fire hazard**

Remove all paper and any other combustible materials from inside the cabinet before the cabinet is powered up. Failure to comply with this warning could result in a fire.

Procedure 10-1

Powering the rectifier(s)

Use this procedure to:

- power up the rectifier
- verify ON/RFA LED indications
- prepare for rectifier adjustment procedures

The Series 800A cabinet accommodates up to three NT5C06CA-3 25 amp rectifier modules mounted in the NT5C10CE rectifier shelf.

This procedure applies to a system that is equipped with one, two, or three rectifier modules.

Note: For cabinets equipped with more than one rectifier, refer to “Chapter task list” on page 10-2 for detailed information on which procedures to perform and when to perform them.

Documentation references

See NTP 169-2071-500.

Test sets

A voltmeter RMS Fluke 8050A (or equivalent) test set is needed.

Tools required

One screwdriver, slotted, small (0.1-inch width) is required.

—continued—

Procedure 10-1 (continued)
Powering the rectifier(s)

Action

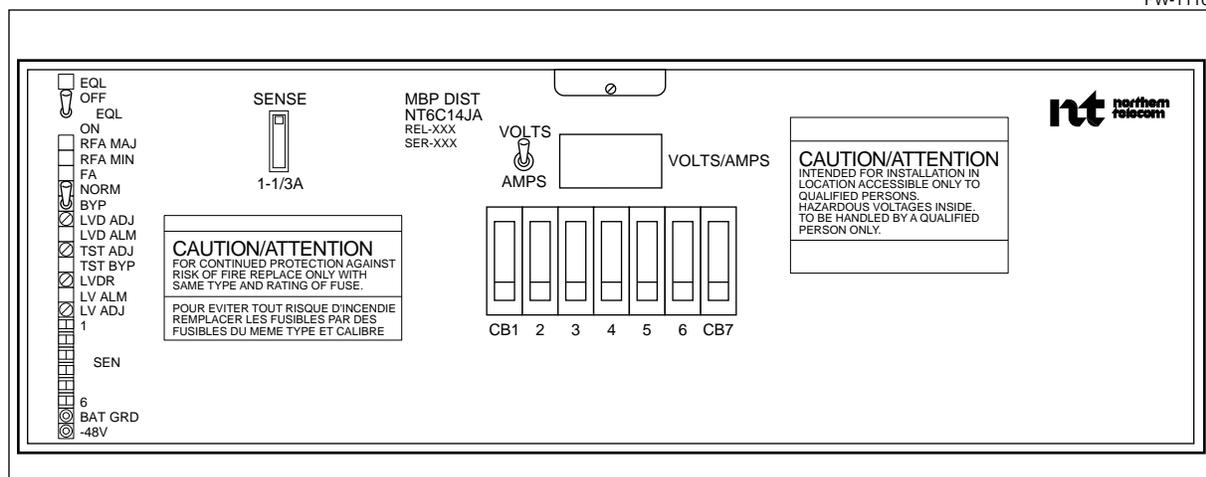
Step	Action
1	Turn all ac, rectifier, BBP and BIP circuit breakers to the OFF position.
2	Set the SENSE DIP switch (see Table 10-1) on the dc distribution shelf (see Figure 10-1) to the OFF position for all rectifier positions to be powered up. Note: The SENSE DIP switch is in the OFF position when the switch is pulled toward you.

Table 10-1
DC distribution shelf SENSE DIP switch designations

SENSE DIP Switch Position	Rectifier shelf	Associated rectifier
1	1	RECT1
2	1	RECT2
3	1	RECT3
4	2	RECT1
5	2	RECT2
6	2	RECT3

Figure 10-1
NT6C14JC distribution faceplate

FW-11100



—continued—

10-6 Adjusting the rectifier and the dc distribution shelf

Procedure 10-1 (continued)
Powering the rectifier(s)

- | Step | Action |
|-------------|--|
| 3 | Perform the following steps as per the type of ac option installed on the cabinet: |

Table 10-2
AC option power-up steps

If the ac option installed is the	Then perform the following steps
Load center	<ul style="list-style-type: none">• Set the main circuit breaker (MAIN) to the ON position (see Figure 10-2 on page 10-7).• Go to step 4.
AC pedestal	<ul style="list-style-type: none">• Set the transfer knife switch to either:<ul style="list-style-type: none">– the normal (NORMAL AC POWER) position– the emergency power (GENERATOR POWER) position (see Figure 10-3 on page 10-8).• Set the MAIN transfer circuit breaker to the ON position in the load center (see Figure 10-2 on page 10-7).• Go to step 4.

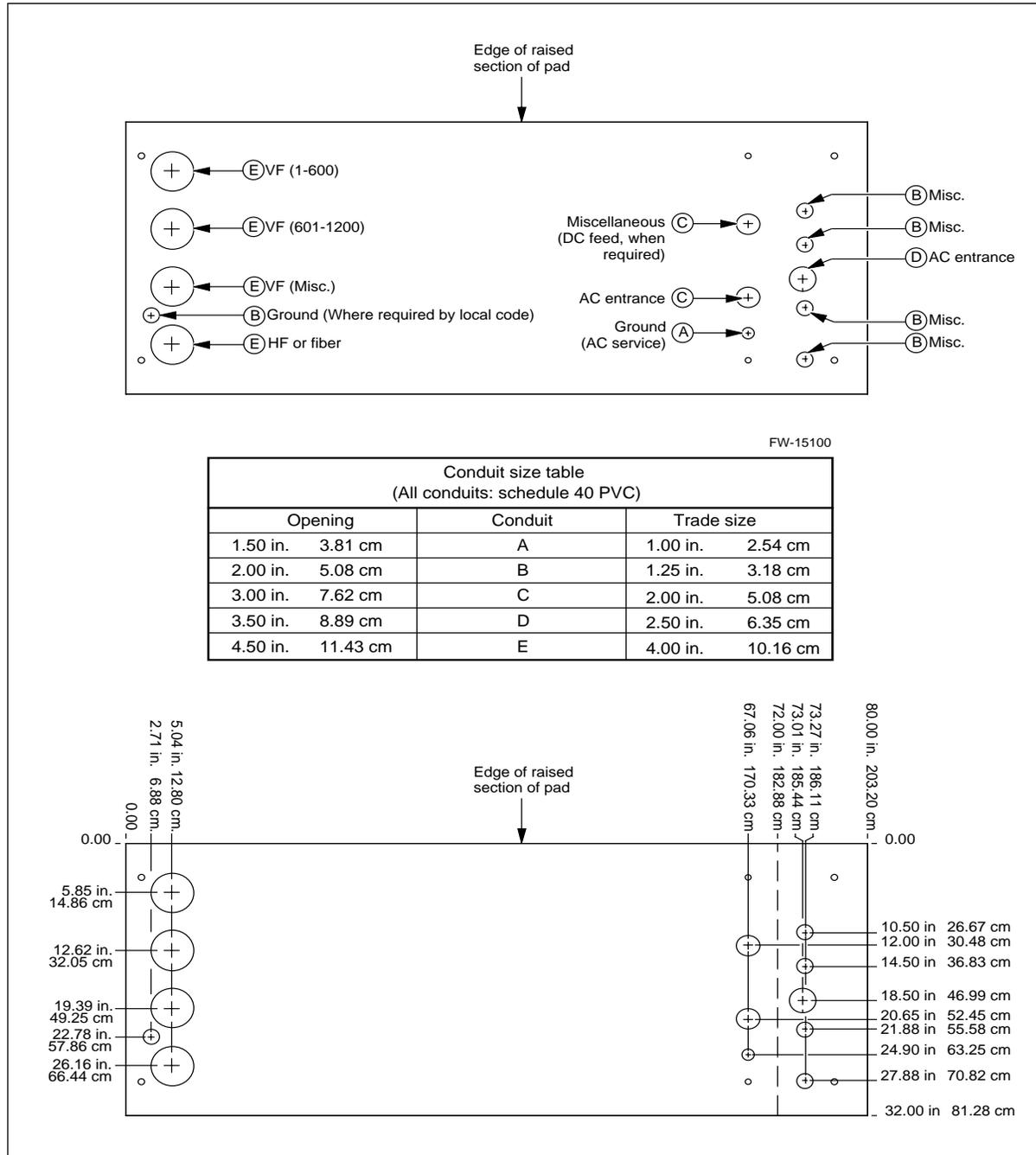
- 4** Switch EQL switch on the dc distribution shelf to the OFF position.

—continued—

Procedure 10-1 (continued)
Powering the rectifier(s)

Figure 10-2
AC load cover

FW-15159



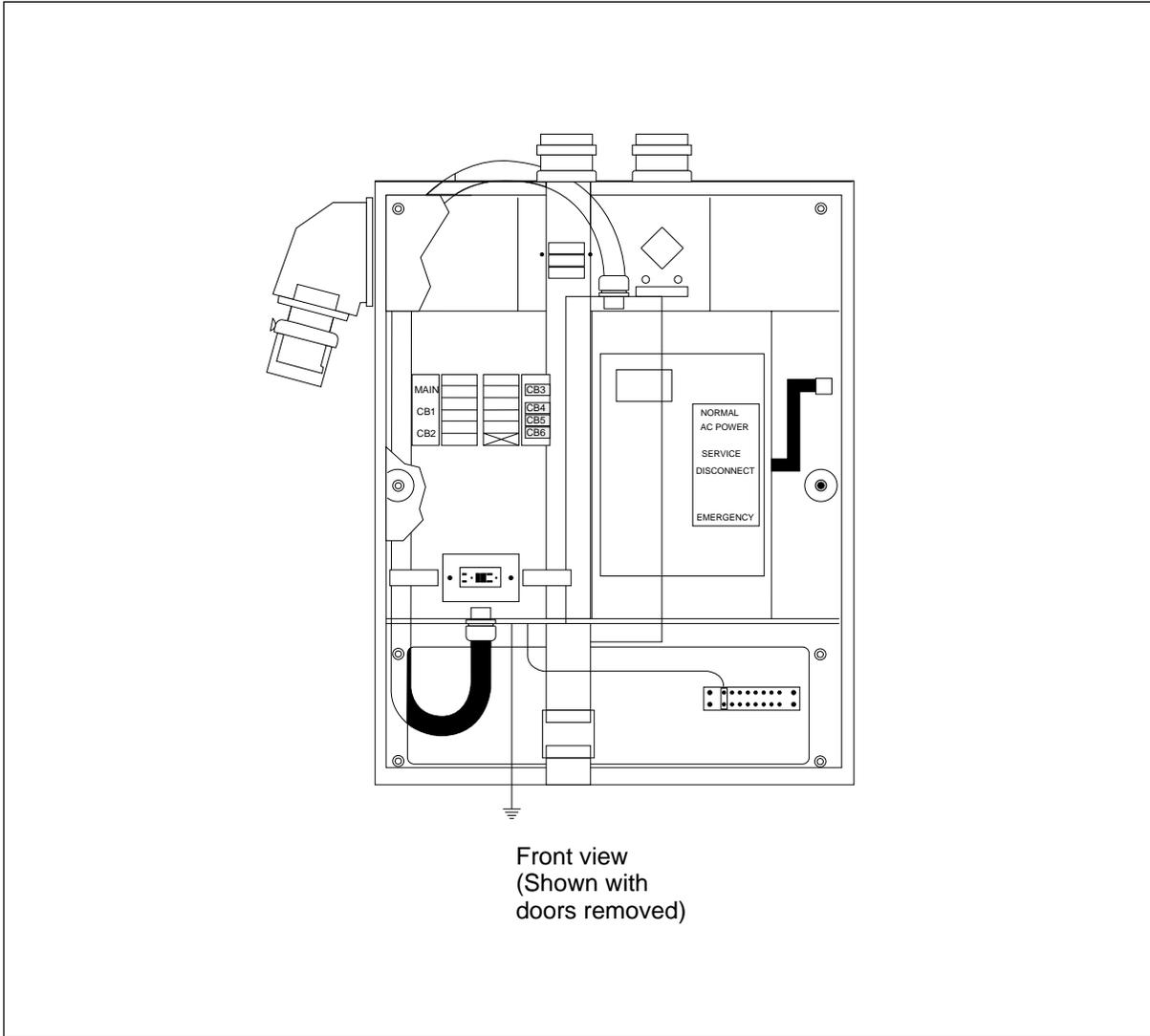
—continued—

10-8 Adjusting the rectifier and the dc distribution shelf

Procedure 10-1 (continued)
Powering the rectifier(s)

Figure 10-3
AC power pedestal load center detail

FW-15166



—continued—

Procedure 10-1 (continued)
Powering the rectifier(s)

Step	Action
5	Switch the dc circuit breaker on the rectifier under test (RECTIFIER 1) to the ON position (see Figure 10-4 on page 10-10). Note: The dc circuit breaker on the rectifier must be turned ON before the ac circuit breaker is turned ON.
6	In the load center, set the rectifier 1 circuit breaker (CB1) to the ON position.
7	Switch the ac circuit breaker (RECTIFIER 1) to the ON position. Note: When the rectifier is initially powered ON, the rectifier OK/FAIL alarm (ON/RFA) LED illuminates red.
8	Verify the ON/RFA LED indication by performing the steps in Table 10-3:

Table 10-3
RFA LED indication verification

If the ON/RFA LED indication after 15 seconds is	Then perform these steps
RED	<ul style="list-style-type: none"> • Turn OFF the dc and ac breakers on the rectifier. • Turn OFF the ac breaker in the load center for the affected rectifier. • Verify the inrush fuse (F1) and the 220 V ac input. – if the fuse and input are correct, replace the rectifier with a new one. • Turn ON the ac breaker in the load center for the affected rectifier. • Go to step 5.
No LED illumination	<ul style="list-style-type: none"> • Replace the rectifier with a new one. • Go to step 5.
Green	<ul style="list-style-type: none"> • Go to Procedure 10-2 on page 10-11.

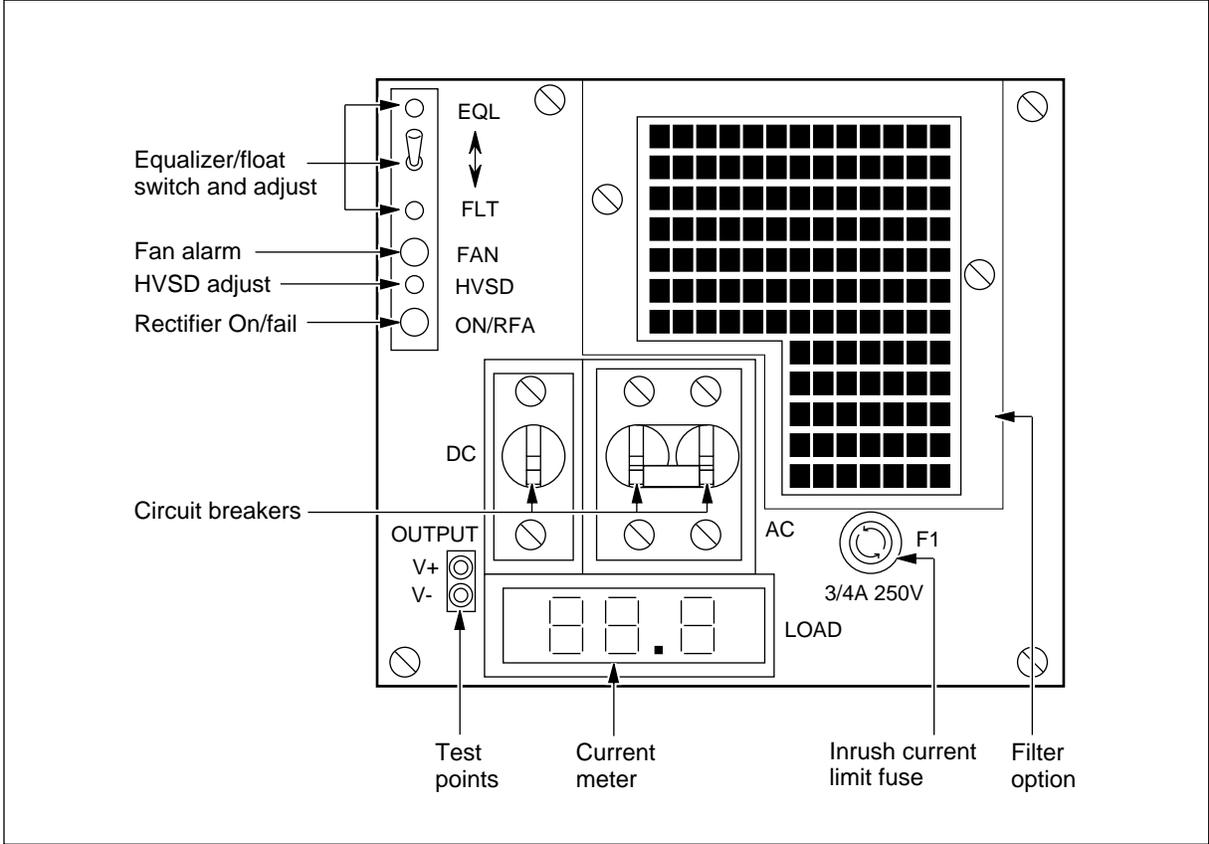
—continued—

10-10 Adjusting the rectifier and the dc distribution shelf

Procedure 10-1 (continued)
Powering the rectifier(s)

Figure 10-4
MPR25 (NT5C06) rectifier faceplate

FW-11099



—end—

Procedure 10-2

Adjusting high voltage shutdown

Use this procedure to:

- perform the high voltage shutdown (HVSD) adjustments on the rectifier
- prepare for EQL adjustment procedures for the rectifier

The Series 800A cabinet accommodates up to three NT5C06CA-3 25-amp rectifier modules mounted in the NT5C10CE rectifier shelf.

This procedure applies to a system that is equipped with one, two, or three rectifier modules.

Note: For cabinets equipped with more than one rectifier, refer to “Chapter task list” on page 10-2 for detailed information on which procedures to perform and when to perform them.

Table 10-4 shows the Nortel Networks recommended rectifier settings for the optional battery selections.

Table 10-4
Rectifier adjustment settings

Battery manufacturer	High voltage shutdown (HVSD)	Equalize (EQL)	Float (FLT)	Low voltage alarm (LVA)	Low voltage disconnect (LVD)
Gates	-56.0 ± 0.1	-55.5 ± 0.1	-55.0 ± 0.1	-47.0 ± 0.1	-43.0 ± 0.1
Eagle-Picher	-56.0 ± 0.1	-55.4 ± 0.1	-54.7 ± 0.1	-47.0 ± 0.1	-43.0 ± 0.1
Yuasa	-56.0 ± 0.1	-54.0 ± 0.1	-54.0 ± 0.1	-47.0 ± 0.1	-43.0 ± 0.1

Documentation references

See NTP 169-2071-500.

Test sets

A voltmeter RMS Fluke 8050A (or equivalent) test set is needed.

Tools required

A screwdriver, slotted, small (0.1-inch width) is required.

—continued—

10-12 Adjusting the rectifier and the dc distribution shelf

Procedure 10-2 (continued)

Adjusting high voltage shutdown

Action

- | Step | Action |
|------|---|
| 1 | <p>Insert the test leads of the digital voltmeter (DVM) into the test points (negative to negative, positive to positive) on the rectifier.</p> <p>Note: On the faceplate of the rectifier module are test points labeled outputs V+ and V- (see Figure 10-4 on page 10-10).</p> |
| 2 | <p>Set the EQL/ FLT switch on the rectifier to the FLT position.</p> <div style="border: 1px solid black; padding: 5px;"><p>CAUTION
Overvoltage damage to equipment hazard
Do NOT adjust the voltage above -56.0 V dc as damage to the AccessNode equipment may result.</p></div> |
| 3 | <p>Slowly adjust the FLT potentiometer clockwise until one of the three events shown in Table 10-5 occurs.</p> <p>Note: Nortel Networks recommends setting the HVSD level at -56.0 ± 0.1 V dc. See Table 10-4 on page 10-11. If the -56.0 V level cannot be reached, hold the FLOAT/EQL switch in the EQL position while adjusting the FLT potentiometer.</p> <p>Note: If the shutdown occurs before -56.0 V dc is reached, the RFA LED illuminates red.</p> |

Table 10-5
Verify the initial HVSD setting on the rectifier

If the event that happens while you are adjusting the FLT potentiometer is	Then perform these steps
The ac circuit breaker on the rectifier trips before -56.0 V dc is reached	record the voltage measurement at which the HVSD occurred. Go to step 4.
The voltage level reaches -56.0 V dc before the ac circuit breaker on the rectifier trips	go to step 5.
The ac circuit breaker trips at -56.0 V dc	go to Procedure 10-3.

—continued—

Procedure 10-2 (continued)
Adjusting high voltage shutdown

- | Step | Action |
|-------------|--|
| 4 | <p>Perform the steps listed below.</p> <ol style="list-style-type: none">Turn the FLT potentiometer one complete turn counterclockwise.Reset the ac breaker to the ON position to turn the rectifier back on.Slightly turn the HVSD potentiometer clockwise to increase HVSD limit.Slowly adjust the FLT potentiometer clockwise again until HVSD occurs or -56.0 V dc is reached.Proceed according to the results of step d:<ul style="list-style-type: none">If shutdown occurs at -56.0 V dc, go to Procedure 10-3.If shutdown occurs before -56.0 V dc is reached, repeat steps a. to e.If shutdown does NOT occur before -56.0 V dc is reached, go to procedure step 5. |
| 5 | <p>Perform the steps listed below.</p> <ol style="list-style-type: none">Leave the FLT voltage set at -56.0 V dc.Slowly turn the HVSD potentiometer counterclockwise until the system shuts down (the ON/RFA LED illuminates red).Slowly turn the FLT potentiometer counterclockwise one-half (1/2) turn.Reset the ac breaker to turn the rectifier back on.Slowly turn the FLT potentiometer clockwise (no farther than -56.0 V dc).Proceed according to the results of step e:<ul style="list-style-type: none">If shutdown occurs at -56.0 V dc, go to Procedure 10-3.If shutdown does NOT occur before -56.0 V dc is reached, repeat steps a. to f.If shutdown occurs before -56.0 V dc is reached, go to procedure step 4. |

—end—

Procedure 10-3

Adjusting equalize voltage

Use this procedure to:

- perform the equalize (EQL) voltage adjustments on the rectifier
- prepare for float voltage adjustment procedures for the rectifier

The Series 800A cabinet accommodates up to three NT5C06CA-3 25 amp rectifier modules mounted in the NT5C10CE rectifier shelf.

This procedure applies to a system that is equipped with one, two, or three rectifier modules.

Note: For cabinets equipped with more than one rectifier, refer to “Chapter task list” on page 10-2 for detailed information on which procedures to perform and when to perform them.

Table 10-6 shows the Nortel Networks recommended rectifier settings for the optional battery selections.

Table 10-6
Rectifier adjustment settings

Battery manufacturer	High voltage shutdown (HVSD)	Equalize (EQL)	Float (FLT)	Low voltage alarm (LVA)	Low voltage disconnect (LVD)
Gates	-56.0 ± 0.1	-55.5 ± 0.1	-55.0 ± 0.1	-47.0 ± 0.1	-43.0 ± 0.1
Eagle-Picher	-56.0 ± 0.1	-55.4 ± 0.1	-54.7 ± 0.1	-47.0 ± 0.1	-43.0 ± 0.1
Yuasa	-56.0 ± 0.1	-54.0 ± 0.1	-54.0 ± 0.1	-47.0 ± 0.1	-43.0 ± 0.1

Documentation references

See NTP 169-2071-500.

Test sets

A voltmeter RMS Fluke 8050A (or equivalent) test set is needed.

Tools required

A screwdriver, slotted, small (0.1-inch width) is required.

—continued—

Procedure 10-3 (continued)
Adjusting equalize voltage

Action

- | Step | Action |
|------|---|
| 1 | Hold the FLOAT/EQL momentary switch to EQL for local equalize and measure the equalize voltage at the test points labeled V+ and V- on the rectifier.
<div style="border: 1px solid black; padding: 5px;"><p>CAUTION
Overvoltage damage to equipment hazard
Do NOT adjust the voltage above -56.0 V dc as damage to the AccessNode equipment may result.</p></div> |
| 2 | Adjust the EQL voltage using the EQL potentiometer clockwise to increase the EQL voltage or counterclockwise to reduce the EQL voltage to -55.5 V dc (see Table 10-6 on page 10-14).
Note: Nortel Networks recommends setting the equalize voltage at -55.5 V dc for the battery options listed. Other types of batteries may require setting voltages at different levels. |
| 3 | Turn the ac circuit breaker on the rectifier to the OFF position. |
| 4 | Turn the dc circuit breaker on the rectifier to the OFF position. |

—end—

Procedure 10-4

Adjusting float voltage

Use this procedure to:

- perform the float (FLT) voltage adjustments on the rectifier
- prepare for the adjustment procedures for additional rectifiers in the cabinet

The Series 800A cabinet accommodates up to three NT5C06CA-3 25 amp rectifier modules mounted in the NT5C10CE rectifier shelf.

This procedure applies to a system that is equipped with one, two, or three rectifier modules.

Note: For cabinets equipped with more than one rectifier, refer to “Chapter task list” on page 10-2 for detailed information on which procedures to perform and when to perform them.

Table 10-7 shows the Nortel Networks recommended rectifier settings for the optional battery selections.

Table 10-7
Rectifier adjustment settings

Battery manufacturer	High voltage shutdown (HVSD)	Equalize (EQL)	Float (FLT)	Low voltage alarm (LVA)	Low voltage disconnect (LVD)
Gates	-56.0 ± 0.1	-55.5 ± 0.1	-55.0 ± 0.1	-47.0 ± 0.1	-43.0 ± 0.1
Eagle-Picher	-56.0 ± 0.1	-55.4 ± 0.1	-54.7 ± 0.1	-47.0 ± 0.1	-43.0 ± 0.1
Yuasa	-56.0 ± 0.1	-54.0 ± 0.1	-54.0 ± 0.1	-47.0 ± 0.1	-43.0 ± 0.1

Documentation references

See NTP 169-2071-500.

Test sets

A voltmeter RMS Fluke 8050A (or equivalent) test set is needed.

Tools required

A screwdriver, slotted, small (0.1-inch width) is required.

—continued—

Procedure 10-4 (continued)
Adjusting float voltage

Action

- | Step | Action |
|---|---|
| 1 | Turn the dc circuit breaker on the rectifier to the ON position.
Note: The dc circuit breaker on the rectifier must be turned ON before the ac circuit breaker is turned ON. |
| 2 | Turn the ac circuit breaker on the rectifier to the ON position. |
| 3 | Set the EQL switch on the rectifier to the FLT position.
Note: The EQL/ FLT switch on the rectifier must be in the FLT position when adjusting the voltage. |
| <div style="border: 1px solid black; padding: 5px;"><p>CAUTION
Overvoltage damage to equipment hazard
Do NOT adjust the voltage above -56.0 V dc as damage to the AccessNode equipment may result.</p></div> | |
| 4 | Slowly adjust the FLT potentiometer clockwise to raise the float voltage or counterclockwise to lower the float voltage to -55.0 V dc (see Table 10-7 on page 10-16).
Note: Nortel Networks recommends setting the float voltage at -55.0 V dc for the battery options listed (Gates). Other types of batteries may require setting voltages at different levels. |

—end—

Procedure 10-5 Adjusting the second or third rectifiers

Use this procedure to:

- perform the voltage adjustments on the second and third rectifiers in the cabinet
- prepare for the load sharing adjustments and verification procedures for all rectifiers in the cabinet

The Series 800A cabinet accommodates up to three NT5C06CA-3 25 amp rectifier modules mounted in the NT5C10CE rectifier shelf.

This procedure applies to a system that is equipped with one, two, or three rectifier modules.

Note: For cabinets equipped with more than one rectifier, refer to “Chapter task list” on page 10-2 for detailed information on which procedures to perform and when to perform them.

Table 10-8 shows the Nortel Networks recommended rectifier settings for the optional battery selections.

Table 10-8
Rectifier adjustment settings

Battery manufacturer	High voltage shutdown (HVSD)	Equalize (EQL)	Float (FLT)	Low voltage alarm (LVA)	Low voltage disconnect (LVD)
Gates	-56.0 ± 0.1	-55.5 ± 0.1	-55.0 ± 0.1	-47.0 ± 0.1	-43.0 ± 0.1
Eagle-Picher	-56.0 ± 0.1	-55.4 ± 0.1	-54.7 ± 0.1	-47.0 ± 0.1	-43.0 ± 0.1
Yuasa	-56.0 ± 0.1	-54.0 ± 0.1	-54.0 ± 0.1	-47.0 ± 0.1	-43.0 ± 0.1

Documentation references

See NTP 169-2071-500.

Test sets

A voltmeter RMS Fluke 8050A (or equivalent) test set is needed.

Tools required

A screwdriver, slotted, small (0.1-inch width) is required.

—continued—

Procedure 10-5 (continued)

Adjusting the second or third rectifiers**Action**

Step	Action
1	Repeat Procedure 10-1 on page 10-4 through Procedure 10-4 on page 10-16 for each rectifier to be adjusted.
2	Ensure that all rectifiers have been adjusted for HVSD, EQL and FLT.
3	Turn the dc and ac circuit breakers for all rectifiers to the OFF position.
4	Turn the dc circuit breaker on the first rectifier to the ON position.
5	Turn the ac circuit breaker on the first rectifier to the ON position.
6	Turn the SENSE DIP switch for the first rectifier to the ON position.
7	Turn the battery string circuit breakers (A1-A4, B2-B4) on the BBP to the ON position.
8	Verify the rectifier ac circuit breakers as shown in Table 10-9:

Table 10-9**Verify the circuit breakers**

If a rectifier circuit breaker	Then perform these steps
Trips	<ul style="list-style-type: none"> • Turn the battery string circuit breakers to the OFF position. • Turn the FLT potentiometer on the rectifier slowly and slightly (about 1/2 turn) counter-clock wise. • Reset the circuit breaker on the rectifier. • Go to step 7.
Does NOT trip	<ul style="list-style-type: none"> • Go to step 9.

Note: All BBP breakers must be in the ON position regardless of whether the associated battery string is being used.

- 9 Allow the batteries to charge for approximately ten minutes.
- 10 Slowly adjust the FLT potentiometer on the rectifier clock wise to increase the float voltage to the normal level (see Table 10-8 on page 10-18).
- 11 Repeat from step 3 for rectifiers 2 and 3 if installed.
- 12 Go to Procedure 10-6 on page 10-20.

—end—

Procedure 10-6 Adjusting load sharing for more than one rectifier

Use this procedure to:

- perform the load sharing adjustments on the second and third rectifiers in the cabinet
- prepare for the dc distribution shelf adjustments and verification procedures

The Series 800A cabinet accommodates up to three NT5C06CA-3 25 amp rectifier modules mounted in the NT5C10CE rectifier shelf.

This procedure applies to a system that is equipped with two or three rectifier modules.

Note: For cabinets equipped with more than one rectifier, refer to “Chapter task list” on page 10-2 for detailed information on which procedures to perform and when to perform them.

Table 10-10 shows the Nortel Networks recommended rectifier settings for the optional battery selections.

Table 10-10
Rectifier adjustment settings

Battery manufacturer	High voltage shutdown (HVSD)	Equalize (EQL)	Float (FLT)	Low voltage alarm (LVA)	Low voltage disconnect (LVD)
Gates	-56.0 ± 0.1	-55.5 ± 0.1	-55.0 ± 0.1	-47.0 ± 0.1	-43.0 ± 0.1
Eagle-Picher	-56.0 ± 0.1	-55.4 ± 0.1	-54.7 ± 0.1	-47.0 ± 0.1	-43.0 ± 0.1
Yuasa	-56.0 ± 0.1	-54.0 ± 0.1	-54.0 ± 0.1	-47.0 ± 0.1	-43.0 ± 0.1

Documentation references

See NTP 169-2071-500.

Test sets

A voltmeter RMS Fluke 8050A (or equivalent) test set is needed.

Tools required

A screwdriver, slotted, small (0.1-inch width) is required.

—continued—

Procedure 10-6 (continued)

Adjusting load sharing for more than one rectifier**Action**

Step	Action
1	Examine all rectifiers for the status of the RFA LEDs (see Figure 10-4 on page 10-10).
2	Perform the load sharing adjustment steps shown in Table 10-11. Note: Table 10-11 lists the RFA LED indications and the associated steps to coarsely adjust the load sharing of multiple rectifiers.

Table 10-11**Rectifier load sharing adjustments**

If the RFA LED indication is that	And the number of rectifiers installed is	Then the indication means	Then perform these steps
Only one RFA LED illuminated GREEN	two	that the rectifier with the GREEN RFA LED is floating slightly too high	slowly and <u>very slightly</u> adjust the FLT potentiometer of the rectifier that has the RFA LED illuminated GREEN counterclockwise until the RFA LEDs of at least one of the other rectifiers illuminate GREEN. Go to step 3.
Only two RFA LEDs illuminated GREEN	three	that the rectifier with the RED RFA LED is floating slightly too low	slowly and <u>very slightly</u> adjust the FLT potentiometer of the rectifier that has the RFA LED illuminated RED clockwise until the RFA LED illuminates GREEN. Go to step 3.
All installed rectifier RFA LEDs illuminated GREEN	any number of rectifiers	that the rectifiers are sharing the load closely	go to step 4.

3 Repeat from step 2 until all rectifiers RFA LED are illuminated GREEN.

—continued—

10-22 Adjusting the rectifier and the dc distribution shelf

Procedure 10-6 (continued)

Adjusting load sharing for more than one rectifier

Step	Action
4	Examine and compare the display of the ammeters on the rectifiers. Note: Nortel Networks recommends that the ammeters of all installed rectifiers read within 0.1 V dc of each other for proper load sharing.
5	Adjust the FLOAT voltage of the rectifier that has the <u>lowest</u> current reading on the rectifier ammeter display by: <ul style="list-style-type: none">slowly and <u>very slightly</u> adjusting the FLT potentiometer clockwise until the ammeter reading is no longer the lowest of the installed rectifiers. Note: The FLT potentiometer load sharing adjustment is very sensitive. Small adjustments can reflect large changes in the ammeter readings.
6	Adjust the FLOAT voltage of the rectifier that has the <u>highest</u> current reading on the rectifier ammeter display by: <ul style="list-style-type: none">slowly and <u>very slightly</u> adjusting the FLT potentiometer counterclockwise until the ammeter reading is no longer the highest of the installed rectifiers. Note: The FLT potentiometer load sharing adjustment is very sensitive. Small adjustments can reflect large changes in the ammeter readings.
7	Repeat from step 4 until all rectifiers have RFA LED illuminated GREEN and the ammeter displays all read within 0.1 A of each other.

—end—

Procedure 10-7

Verifying dc distribution shelf alarms

Use this procedure to:

- perform the alarm verification on the NT6C14JC dc distribution shelf
- prepare for the low voltage disconnect adjustment procedures for all rectifiers in the cabinet

The Series 800A cabinet accommodates up to three NT5C06CA-3 25 amp rectifier modules mounted in the NT5C10CE rectifier shelf.

This procedure applies to a system that is equipped with one, two, or three rectifier modules.

Note: If the unit fails, return it to the nearest Nortel Networks Repair and Return facility.

Documentation

See NTP 169-9051-100.

Test sets

A voltmeter RMS Fluke 8050A (or equivalent) test set is needed.

Tools required

A screwdriver, slotted, small (0.1-inch width) is required.

—continued—

10-24 Adjusting the rectifier and the dc distribution shelf

Procedure 10-7 (continued)

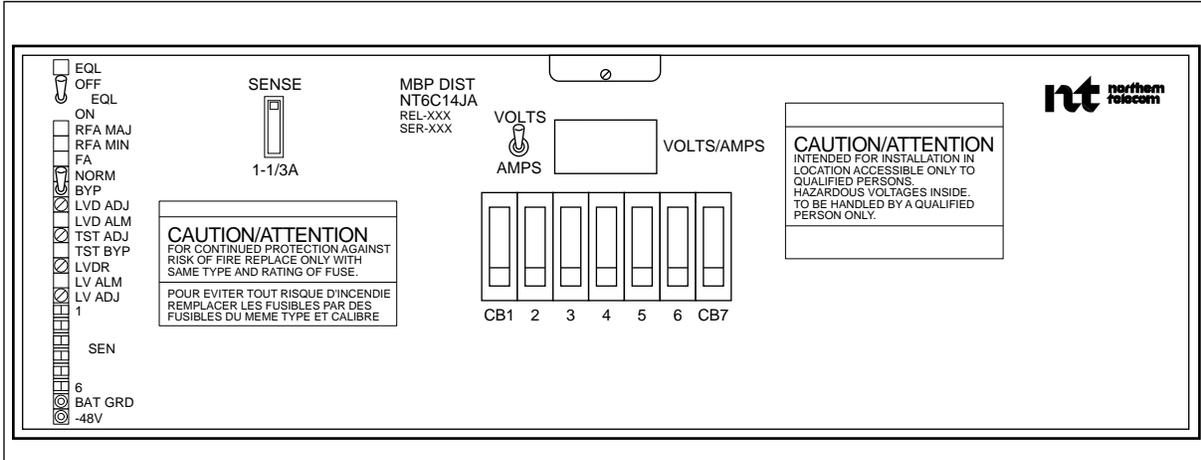
Verifying dc distribution shelf alarms

Action

Step	Action
1	Ensure that all of the circuit breakers on the BIP are turned to the OFF position.
2	Turn all circuit breakers on the dc distribution shelf to the ON position (see Figure 10-5 on page 10-24).
3	Record the voltage displayed on the faceplate readout.
4	Confirm that the FA alarm indicator is extinguished.
5	Turn OFF CB1 on the dc distribution shelf to verify that the FA alarm LED illuminates red.
6	Turn CB1 back ON to verify that the FA alarm LED extinguishes.
7	Turn OFF, then ON, each of the circuit breakers, one at a time, to verify that the FA indicator illuminates and extinguishes with each breaker trip.
8	Turn all breakers back to the OFF position.
9	Turn ON the EQL switch on the dc distribution shelf to verify that the EQL indicator illuminates yellow and that the voltage level displayed on the faceplate display corresponds to the EQL level (-55.5 ± 0.1) set on the rectifiers.

Figure 10-5
NT6C14JC DC distribution shelf faceplate

FW-11100



—continued—

Procedure 10-7 (continued)

Verifying dc distribution shelf alarms

Step	Action
10	Turn the EQL switch to the OFF position to verify that the voltage level returns to the FLOAT level on the dc distribution shelf display.
11	Turn the ac breaker on Rectifier 1 to the OFF position to verify that the RFA MIN LED illuminates yellow on the dc distribution shelf.
12	Turn the ac circuit breaker on the rectifier back to the ON position to verify that the RFA MIN LED extinguishes.
13	Repeat step 11 and step 12 for each rectifier installed.
14	If more than one rectifier is installed, turn the ac breaker on two rectifiers to the OFF position to verify that the RFA MAJ LED illuminates.
15	Turn one of the rectifiers ac circuit breaker to the ON position to verify that the RFA MAJ LED extinguishes and that the RFA MIN LED illuminates.
16	Turn the ac breaker on the remaining rectifier to the ON position to verify that the RFA MIN LED extinguishes.
17	Set the LVD BYP/NORMAL switch to the BYP position to verify that the TST BYP LED illuminates.
18	Continue dc distribution shelf adjustments using Procedure 10-8 on page 10-26.

—end—

Procedure 10-8

Adjusting dc distribution shelf low voltage alarms

Use this procedure to:

- perform the low voltage alarm (LVA) adjustments on the NT6C14JC dc distribution shelf
- prepare for the low voltage disconnect adjustment procedures for all rectifiers in the cabinet

The Series 800A cabinet accommodates up to three NT5C06CA-3 25 amp rectifier modules mounted in the NT5C10CE rectifier shelf.

This procedure applies to a system that is equipped with one, two, or three rectifier modules.

Note: If the unit fails, return it to the nearest Nortel Networks repair and return facility.

Documentation

See NTP 169-9051-100.

Test sets

A voltmeter RMS Fluke 8050A (or equivalent) test set is needed.

Tools required

A screwdriver, slotted, small (0.1-inch width) is required.

—continued—

Procedure 10-8 (continued)

Adjusting dc distribution shelf low voltage alarms**Action**

Step	Action
1	Ensure that the LVD BYP/NORMAL switch is set to the BYP position.
2	Connect the digital voltmeter to the BAT GRD and -48V test points on the front of the dc distribution shelf.
3	Monitor the voltage at the test points to verify the LVA threshold.
4	Slowly adjust the TST ADJ potentiometer counterclockwise until one of the three events shown in Table 10-12 occurs.

Table 10-12
LVA LED indications

If the event that happens while you are adjusting the TST ADJ potentiometer is	Then perform these steps
The LVA LED illuminates before reaching -47.0 ± 0.2 V dc	go to step 5.
The LVA LED does NOT illuminate before reaching -47.0 ± 0.2 V dc	go to step 9.
The LVA LED illuminates at -47.0 ± 0.2 V dc	go to Procedure 10-9 on page 10-28.

- 5 Continue to adjust the TST ADJ potentiometer counterclockwise until the voltage reading reaches -47.0 ± 0.2 V dc.
- 6 Slowly turn the LVA ADJ potentiometer clockwise until the LVA LED extinguishes.
- 7 Slowly turn the LVA ADJ potentiometer counterclockwise until the LVA LED illuminates.
- 8 Go to step 11.
- 9 Using the TST ADJ potentiometer, set the voltage reading to -47.0 ± 0.2 V dc.
- 10 Slowly turn the LVA ADJ potentiometer clockwise until the LVA LED illuminates.
- 11 Continue the dc distribution shelf adjustments using Procedure 10-9 on page 10-28.

—end—

Procedure 10-9

Adjusting dc distribution shelf low voltage disconnect

Use this procedure to:

- perform the low voltage disconnect/return (LVD/LVDR) adjustments on the NT6C14JC dc distribution shelf
- prepare for the low voltage disconnect adjustment procedures for all rectifiers in the cabinet

The Series 800A cabinet accommodates up to three NT5C06CA-3 25 amp rectifier modules mounted in the NT5C10CE rectifier shelf.

This procedure applies to a system that is equipped with one, two, or three rectifier modules.

Note: If the unit fails, return it to the nearest Nortel Networks repair and return facility.

Documentation

See NTP 169-9051-100.

Test sets

A voltmeter RMS Fluke 8050A (or equivalent) test set is needed.

Tools required

A screwdriver, slotted, small (0.1-inch width) is required.

—continued—

Procedure 10-9 (continued)

Adjusting dc distribution shelf low voltage disconnect**Action**

Step	Action
1	Ensure that the LVD BYP/NORMAL switch is set to the BYP position.
2	Connect the digital voltmeter to the BAT GRD and -48V test points on the front of the dc distribution shelf.
3	Monitor the voltage at the test points to verify the LVD threshold.
4	Slowly adjust the TST ADJ potentiometer counterclockwise until one of the three events shown in Table 10-13 occurs.

Table 10-13
LVD LED indications

If the event that happens while you are adjusting the TST ADJ potentiometer is	Then perform these steps
The LVD LED illuminates before reaching -43.0 ± 0.2 V dc	go to step 5.
The LVD LED does NOT illuminate before reaching -43.0 ± 0.2 V dc	go to step 9.
The LVD LED illuminates at -43.0 ± 0.2 V dc	go to Procedure 10-10.

- 5 Continue to adjust the TST ADJ potentiometer clockwise until the voltage reading reaches -43.0 ± 0.2 V dc.
- 6 Slowly turn the LVD potentiometer counterclockwise until the LVD LED extinguishes.
- 7 Slowly turn the LVD potentiometer clockwise until the LVD LED illuminates.
- 8 Go to step 11.
- 9 Using the TST ADJ potentiometer, set the voltage reading to -43.0 ± 0.2 V dc.
- 10 Slowly turn the LVD potentiometer clockwise until the LVD LED illuminates.
- 11 Continue the dc distribution shelf adjustments using Procedure 10-10 on page 10-30.

—end—

Procedure 10-10

Adjusting dc distribution shelf low voltage disconnect return

Use this procedure to:

- perform the low voltage disconnect/return (LVD/LVDR) adjustments on the NT6C14JC dc distribution shelf
- prepare for the low voltage disconnect adjustment procedures for all rectifiers in the cabinet

The Series 800A cabinet accommodates up to three NT5C06CA-3 25 amp rectifier modules mounted in the NT5C10CE rectifier shelf.

This procedure applies to a system that is equipped with one, two, or three rectifier modules.

Note: If the unit fails, return it to the nearest Nortel Networks repair and return facility.

Documentation

See NTP 169-9051-100.

Test sets

A voltmeter RMS Fluke 8050A (or equivalent) test set is needed.

Tools required

A screwdriver, slotted, small (0.1-inch width) is required.

—continued—

Procedure 10-10 (continued)

Adjusting dc distribution shelf low voltage disconnect return**Action**

- | Step | Action |
|------|---|
| 1 | Ensure that the LVD BYP/NORMAL switch is set to the BYP position. |

**CAUTION 1****Power loss hazard**

Do not switch the NORMAL/BYPASS switch back to the NORMAL position if the LVD/LVDR potentiometers are readjusted and their adjustments are not completely verified. This can cause loss of power to the load.

- | | |
|---|---|
| 2 | Slowly turn the TST ADJ potentiometer clockwise until the LVA LED extinguishes at -47.0 ± 0.4 V dc.
Note: The LVA threshold has been set as per Procedure 10-8 on page 10-26. |
| 3 | Slowly adjust the TST ADJ potentiometer clockwise until one of the three events shown in Table 10-14 occurs. |

Table 10-14**LVD/LVDR events**

If the event that happens while you are adjusting the TST ADJ potentiometer is	Then perform these steps
The LVD LED extinguishes before reaching -50.5 ± 0.2 V dc	go to step 4.
The LVD LED does NOT extinguish before reaching -50.5 ± 0.2 V dc	go to step 7.
The LVD LED illuminates at -50.5 ± 0.2 V dc	go to step 8.

- | | |
|---|---|
| 4 | Slowly adjust the TST ADJ potentiometer counterclockwise until the LVD LED illuminates. |
| 5 | Slowly turn the LVDR potentiometer clockwise 1/2 turn. |
| 6 | Go to step 3. |

—continued—

10-32 Adjusting the rectifier and the dc distribution shelf

Procedure 10-10 (continued)

Adjusting dc distribution shelf low voltage disconnect return

Step	Action
------	--------

7	Slowly turn the LVDR potentiometer counterclockwise until the LVD LED extinguishes.
---	---

8	Set the BYP/NORMAL switch to the NORMAL position.
---	---



CAUTION 2

DC voltage output levels

If this is a new installation, the dc voltage output level from each rectifier module **must** be tested and adjusted as per Nortel Networks recommended float voltages for the battery manufacturers listed below.

Eagle-Picher 6V: -54.70 ±0.10 V dc

Gates 12V: -55.00 ±0.10 V dc

Yuasa 12V: -54.00 ±0.10 V dc

Note: These ranges are subject to change without notice.

9	Verify that the FLOAT voltage at the dc distribution shelf is within the parameters set in Procedure 10-4 on page 10-16.
---	--

10	Ensure that all circuit breakers on the rectifier shelf are ON.
----	---

11	Ensure that all SENSE DIP switches on the dc distribution shelf are in the ON position.
----	---

Note: The SENSE DIP switch is in the ON position when the switch is pushed away you.

12	Ensure that all circuit breakers on the dc distribution shelf are ON.
----	---

13	Ensure that all circuit breakers on the battery breaker panel are ON.
----	---

14	Turn the CU A and CU B circuit breakers on the BIP to the ON position.
----	--

—end—

Finishing the S800A cabinet installation procedures

This section provides information for installing the protector modules into the S800A cabinet and navigational information for performing commissioning and site testing operations for the S800A cabinet.

Commissioning and Testing, Volume 3, provides procedures for commissioning and testing the AccessNode system.

Note: These documents apply to all configurations of the AccessNode such as bays or cabinets.

How to use this chapter

In the following table, you will find a list of the procedures for installing the protector modules into the S800A cabinet and navigational information for performing commissioning and site testing operations for the AccessNode system. Perform the procedures in the order listed. If you cannot successfully complete these procedures, contact your next level of support.

Chapter task list

Task	See
Install the protector modules	Procedure 11-1 on page 11-2
Perform the system commissioning and testing	Procedure 11-2 on page 11-6
Installing the shipping brackets	Procedure 11-3 on page 11-7

Procedure 11-1 Installing the protector modules

This procedure explains how to install the line protector modules into the protector blocks of the service protection center (SPC) located inside the termination compartment.

Note: SPC protector positions 97–100 on each SPC block are not used in the S800A cabinet. Each copper-distribution shelf (CDS) provides 96 voice frequency (VF) lines and the last VF cable from each CDS (CDS connector 76–96 on the right-hand side of the CDS) has pairs 97–100 spared out.

Nortel Networks recommends that the VF pairs from the CDS to the outside plant (OSP) VF subscriber cable be in an OPEN state when the CDS line cards are first powered up. That is, an electrical connection from the CDS to the OSP VF cable must not exist at the time of powering up the CDS line cards. Supplying power to the CDS shelves is described in previous S800A chapters.

If you are attempting to install the protector modules prior to powering up the cabinet and CDS line cards and the cross-connect wiring has already been completed, only install the protector modules up to the first detent position so that the equipment is not connected to the OSP cable and the OSP cable is protected. After the cabinet and CDS line cards have been powered up, you can then fully engage the protector modules into the protector block.

If the cross-connect wiring in the termination compartment has not been installed, then the VF pairs from the CDS will not be connected to the OSP subscriber cable and you can install the protector modules at any time.

Cautions

Observe the following caution:

	<p>CAUTION Risk of damage to equipment During initial setup of the AccessNode, Nortel Networks recommends that the equipment side remain disconnected from the outside plant subscriber loops (at the protector modules) until the line cards are installed and powered up. For example, when using five-pin protector modules, pull the modules out slightly to the first detent to disconnect the modules.</p>
---	--

—continued—

Procedure 11-1 (continued)
Installing the protector modules

Tools required

There are no special tools required to perform this procedure.

Material required

Use type 7X or better UL approved protector modules.

Nortel Networks recommends solid state protectors in all outside applications. The voltage-limiting characteristics of the station protectors have a considerable impact on voltages impressed on the electronics of the system. Solid state protectors offer faster reaction times, a more predictable operating voltage, a longer service life and an increased safety factor.

Action

Step Action

- 1 Open the termination compartment door.
- 2 Engage the door restrainer bar.
- 3 Perform the following steps:

If the cabinet is equipped with	Then perform these steps
A cross-connect swing frame	<ul style="list-style-type: none"> • Unlatch the cross-connect swing frame by releasing the top and bottom latches. • Carefully open the cross-connect swing frame. <li style="padding-left: 20px;">Note: Do not stress the cabling. • Latch the swing frame in the open position using the bar on the top of the outside door. • Go to step 4.
No cross-connect swing frame	<ul style="list-style-type: none"> • Go to step 4.

- 4 Loosen the thumbscrews for each SPC and open each cover.
Note: Power to the CDS shelves will be supplied in subsequent S800A installation procedure chapters. Nortel Networks recommends that the VF pairs from the CDS to the OSP VF subscriber cable be in an OPEN state when the CDS shelf is first powered up. That is, an electrical connection from the CDS to the OSP VF cable must not exist at the time of powering up the CDS.

—continued—

11-4 Finishing the S800A cabinet installation procedures

Procedure 11-1 (continued)

Installing the protector modules

Step	Action
5	Plug in all the protectors as per the customer configuration required (see Figure 11-1 on page 11-5). Note: If the cross-connect wiring has been completed or is planned to be completed prior to powering the CDS shelves (installing batteries and powering the rectifiers), only install the protector modules up to the first detent position so that the equipment is not connected to the OSP cable and the OSP cable is protected. Otherwise, you can plug the modules completely into the block positions.
6	Close the SPC cover.
7	Tighten the thumbscrews.
8	Unlatch the swing frame (if installed).
9	Carefully close the swing frame.
10	Fasten the frame in place using the top and bottom latches.

	<p>CAUTION Fire Hazard</p> <p>Before closing the cabinet, remove all paper and any other combustible materials from inside the cabinet after any maintenance operation is completed.</p> <p>Failure to comply with this warning could result in a fire.</p>
--	---

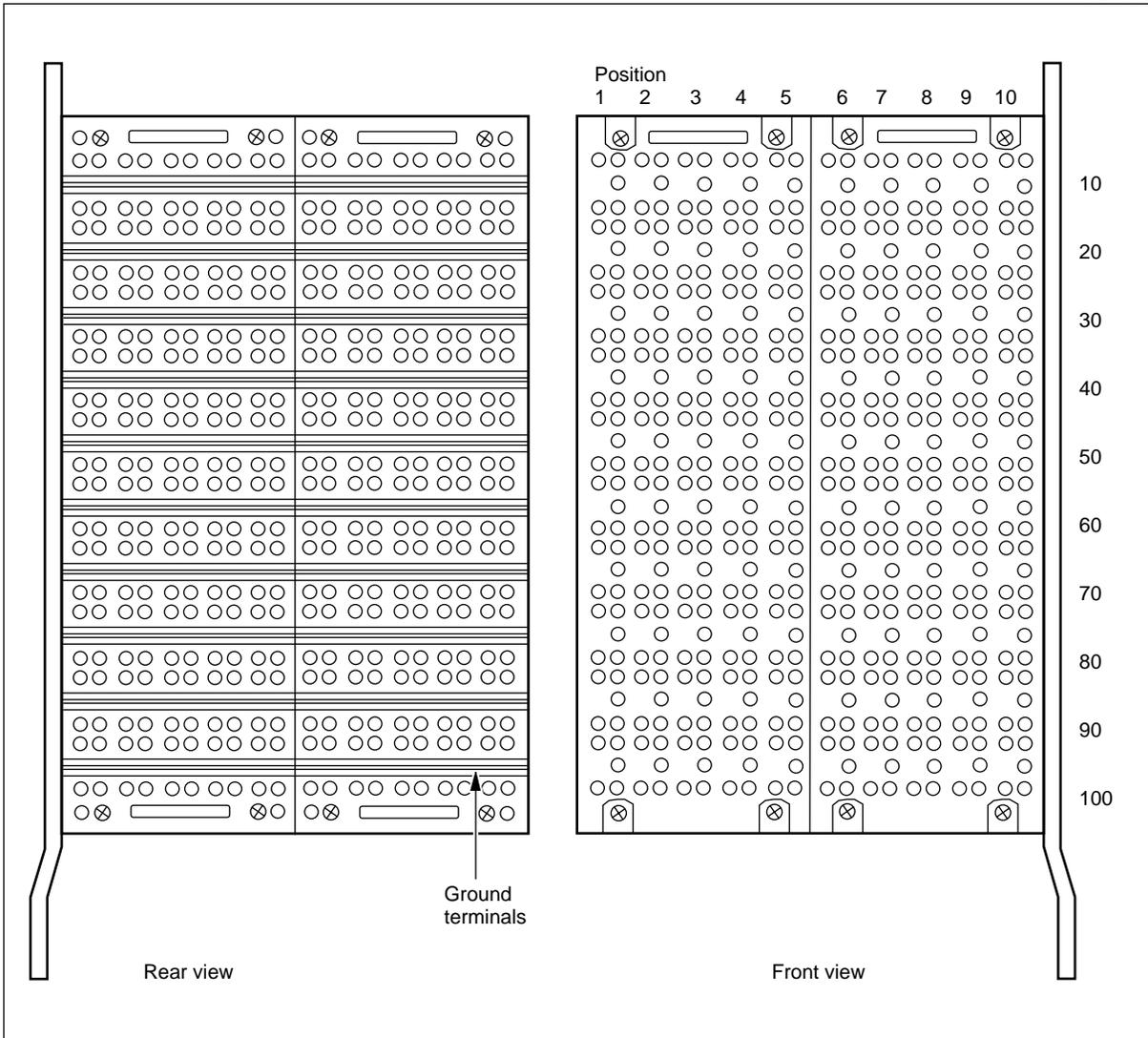
11	Release the termination compartment door restrainer rod.						
12	Close the termination compartment door.						
13	Continue the S800A cabinet installation according to the following:						
	<table border="1"><thead><tr><th>If the commissioning and testing is to be done</th><th>Then</th></tr></thead><tbody><tr><td>Now</td><td>go to Procedure 11-2, "Performing commissioning and site testing" on page 11-6 and then perform Procedure 11-3, "Installing the shipping brackets" on page 11-7</td></tr><tr><td>At some later date</td><td>go to Procedure 11-3, "Installing the shipping brackets" on page 11-7</td></tr></tbody></table>	If the commissioning and testing is to be done	Then	Now	go to Procedure 11-2, "Performing commissioning and site testing" on page 11-6 and then perform Procedure 11-3, "Installing the shipping brackets" on page 11-7	At some later date	go to Procedure 11-3, "Installing the shipping brackets" on page 11-7
If the commissioning and testing is to be done	Then						
Now	go to Procedure 11-2, "Performing commissioning and site testing" on page 11-6 and then perform Procedure 11-3, "Installing the shipping brackets" on page 11-7						
At some later date	go to Procedure 11-3, "Installing the shipping brackets" on page 11-7						

—continued—

Procedure 11-1 (continued)
Installing the protector modules

Figure 11-1
Protector block layout

FW-15149



—end—

Procedure 11-2

Performing commissioning and site testing

Use this procedure to as a reference to commissioning and site testing procedures to continue the installation of the S800A cabinet.

Requirements

The S800A cabinet must be operating normally on rectifier power.

Documentation requirements

See *Commissioning and Testing*, Volume 3.

Action

Step	Action
------	--------

- 1 Verify that there are no combustible materials in the cabinet.



CAUTION
Fire Hazard

Before closing the cabinet, remove all paper and any other combustible materials from inside the cabinet after any maintenance operation is completed.

Failure to comply with this warning could result in a fire.

- 2 Proceed to the applicable S800A commissioning and testing document as shown in the following table.

If you want to	Then use this document
Commission the S800A AccessNode cabinet system	<i>Commissioning and Testing</i> , Volume 3
Test the S800A AccessNode cabinet system	<i>Commissioning and Testing</i> , Volume 3

—end—

Procedure 11-3

Installing the shipping brackets

This procedure explains how to install the top and bottom shipping brackets back onto the swing frames in the electronics compartment in the S800A cabinet.

Note: The shipping brackets were removed in Chapter 2, “Installing the cabinet” at the beginning of the installation process in order to have access to the interior of the electronics compartment.

The upper shipping bracket on the swing frames in each side of the electronics compartment must be installed in all applications to minimize vibration from the surrounding environment.

For Zone 4 earthquake applications, you must also install the lower shipping brackets. All shipping brackets must be installed on the top and bottom of the swing frames in each side of the electronics compartment in Zone 4 applications.

**CAUTION****Shipping bracket requirements**

The upper shipping brackets are required to secure the equipment frames to minimize the effects of external environmental vibrations.

In Zone 4 regions, the upper and lower shipping brackets are required.

Always ensure that the shipping brackets are installed before leaving the cabinet.

Tools required

A one socket driver set, 1/2-inch drive, is required.

Material required

- 2 upper shipping brackets
- 12 machine screws
- 12 lock washers
- 12 flat washers
- 2 lower shipping brackets

—continued—

11-8 Finishing the S800A cabinet installation procedures

Procedure 11-3 (continued)

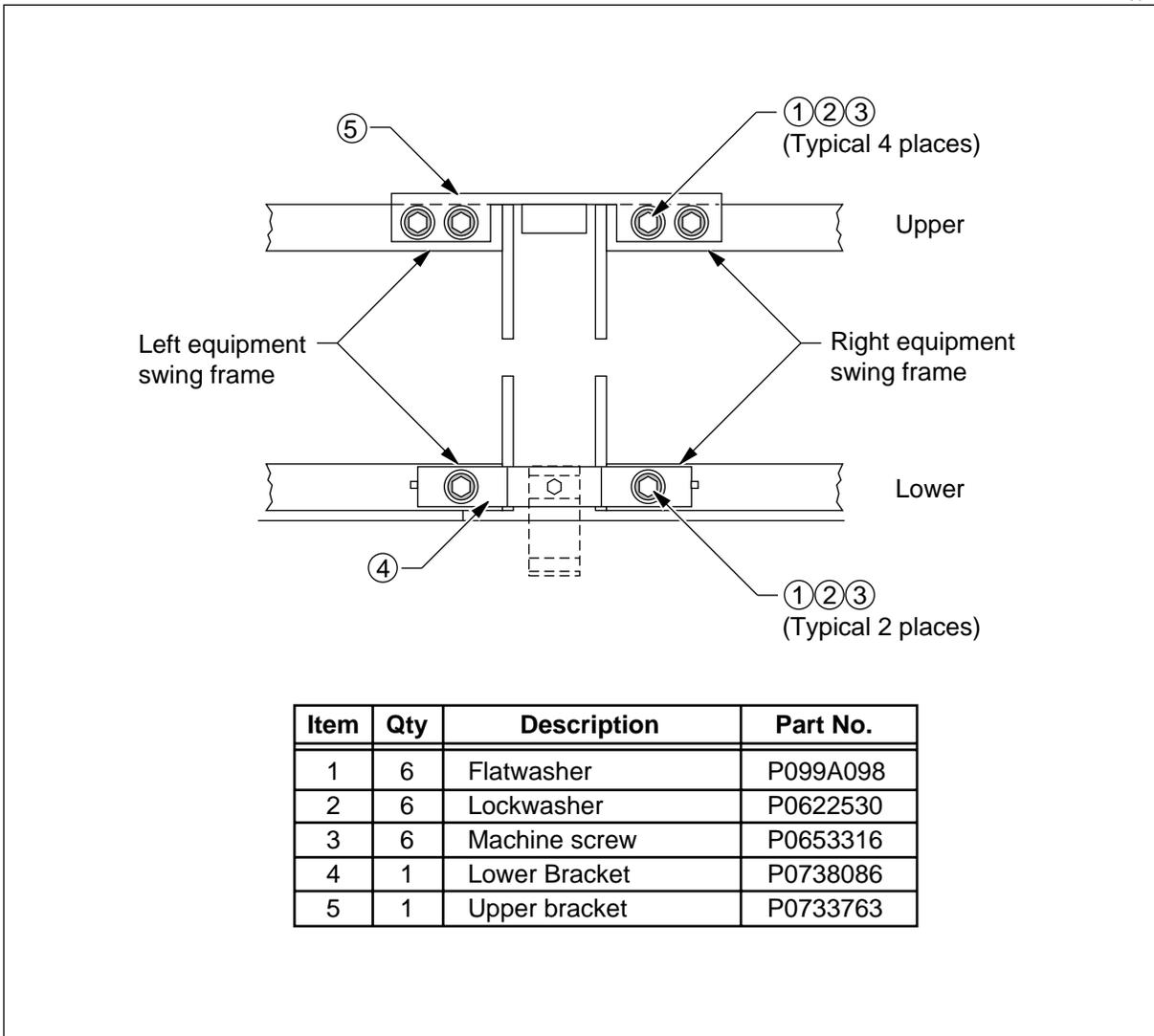
Installing the shipping brackets

Action

- | Step | Action |
|------|---|
| 1 | Close the swing frames on both sides of the electronics compartment. |
| 2 | Install the shipping brackets to the top and bottom of the swing frames in each side of the electronics compartment as shown Figure 11-2. |
| 3 | Close and lock the cabinet doors. |

Figure 11-2
Installing the shipping brackets

FW-15314



—end—

Cabinet maintenance operations

This section provides installation procedures for the cabinet maintenance operations for the S800A cabinet.

All maintenance procedures on the cabinet should be performed by the operating company's maintenance crews or by contractor personnel.

Some procedures may be service affecting and should only be performed during low traffic hours.

Note: Cabinet alarms in the Series 800A cabinet are displayed at the AccessNode inside the cabinet and transmitted to the central office.

Table 12-1 on page 12-3 lists the cabinet parts that require regular maintenance and gives a suggested schedule for performing these operations.

Table 12-2 on page 12-5 lists the replacement part numbers for the Series 800A cabinet. All part numbers apply to cabinets equipped with either the heat exchanger or air induction roof options unless otherwise noted.

Read the following caution before performing this procedure:

**CAUTION****Fire hazard**

Before closing the cabinet, remove all paper and any other combustible materials from inside the cabinet after any maintenance operation is completed.

Failure to comply with this warning could result in a fire.

How to use this chapter

In the following table, you will find a list of the procedures for performing in-service maintenance activities on the S800A cabinet. Perform the procedures in the order listed. If you cannot successfully complete these procedures, contact your next level of support.

Chapter task list

Task	See
<p>Batteries</p> <p>Replace a battery string</p>	<p>Procedure 12-1 on page 12-6</p>
<p>Rectifiers</p> <p>Replace the rectifier</p> <p>Adjust the high voltage shutdown (HVSD) on replacement rectifiers Caution: This procedure is service affecting.</p> <p>Adjust the equalize (EQL)voltage on replacement rectifiers</p> <p>Adjust float voltage for replacement rectifiers</p> <p>Adjust load sharing for replacement rectifiers</p>	<p>Procedure 12-2 on page 12-13</p> <p>Procedure 12-3 on page 12-19</p> <p>Procedure 12-4 on page 12-24</p> <p>Procedure 12-5 on page 12-26</p> <p>Procedure 12-6 on page 12-28</p>
<p>Emergency power connections</p> <p>Connect the emergency standby power when the ac load box with mechanical interlock is installed</p> <p>Connect the emergency standby power when the ac power pedestal is installed</p>	<p>Procedure 12-7 on page 12-32</p> <p>Procedure 12-8 on page 12-35</p>
<p>Termination compartment</p> <p>Install the jumper wire spool in the termination compartment</p> <p>Use the BIX or binding post test clips</p> <p>Use the protector test access cord</p>	<p>Procedure 12-9 on page 12-38</p> <p>Procedure 12-10 on page 12-39</p> <p>Procedure 12-11 on page 12-40</p>
<p>Fan units</p> <p>Replace a fan unit in the heat exchanger roof</p> <p>Replace and external fan unit in a heat exchanger roof</p> <p>Replace a fan unit in the air induction roof</p> <p>Replacing the equipment fan shelves</p> <p>Installing a new equipment fan shelf</p> <p>Replace the fan filter in the heat exchanger roof</p> <p>Replace the fan filter in the air induction roof</p>	<p>Procedure 12-12 on page 12-42</p> <p>Procedure 12-13 on page 12-44</p> <p>Procedure 12-14 on page 12-46</p> <p>Procedure 12-15 on page 12-48</p> <p>Procedure 12-16 on page 12-57</p> <p>Procedure 12-17 on page 12-63</p> <p>Procedure 12-18 on page 12-65</p>

Recommended maintenance

Table 12-1 lists the cabinet maintenance requirements and recommended scheduling for the S800A cabinet.

Table 12-1
Recommended maintenance for the Series 800A cabinet

Item	Operation	Recommended Interval
Cabinet fans	<p>Open the cabinet doors and verify that the intake and exhaust fans are operating properly. Remove covers from the fans, rotate, and use a heat gun to activate the fans.</p> <p>CAUTION Reset the set point on the thermostat to 86° F.</p> <p>CAUTION Fans must be replaced within four hours to avoid excessive heat build-up in the cabinet.</p> <p>Replace defective fans as described in Procedure 12-12 and Procedure 12-14.</p>	<p>6 months</p> <p>As required</p>
Air filters	<p>Replace all air filters as described in Procedure 12-17 on page 12-63 and Procedure 12-18 on page 12-65.</p>	<p>As required</p> <p>Recommendation: Inspect the filters 30 days after installation to determine the frequency of future inspections.</p>
Heaters and heater thermostats	<p>With heaters plugged into their proper receptacles,</p> <ol style="list-style-type: none"> 1) Activate the heater thermostats with a cooling/freezing spray. The heater thermostat is located underneath and to the left of the ac outlet box (as you face the ac box). 2) Verify that the heaters are getting warm to the touch. Two of the heaters are located on the termination side wall, two heaters are located on the ac power side wall, and one heater is located on the battery compartment floor. 	<p>24 months</p>
Door alarms	<ol style="list-style-type: none"> 1) Open the front door and verify that a door alarm is displayed on the Maintenance unit; the coded alarm is a Type 8 alarm based on customer assigned alarm strapping. 2) Pull out the door switch plunger and check that the alarm is canceled. 3) Release the door switch and verify that the door alarm is displayed again. 4) Repeat Steps 1 through 3 for the rear door. 	<p>Each visit to the cabinet</p>
—continued—		

12-4 Cabinet maintenance operations

Table 12-1 (continued)
Recommended maintenance for the Series 800A cabinet

Item	Operation	Recommended Interval
Batteries	1) Refer to the battery manufacturer's suggested procedures or local practices for routine battery maintenance. 2) Verify battery and cabling by removing the battery string cable assembly plugs. Remove the plugs one at a time from the battery breaker interface connector. 3) Check the battery voltage presence and value. 4) Reconnect the plug to its assigned location from which it was removed. 5) Replace batteries or cable assemblies as required.	1) 12 months with an average ambient temperature of 77° F. Check more often in warmer climates 2) During routine cabinet maintenance procedures or as required by local practices
Door hinges and pins	Lubricate with either of the two suggested following materials: <ul style="list-style-type: none"> • 3M #8915, white lithium grease, 24 oz. aerosol spray can (CPC: R0112617) • American Grease Stick Co. #DKC-3, tan wax grease stick (CPC: R0115456) 	As required: Spray liberally. Use a clean, odorless applicator.
Paint finish	Refer to Table 12-2 for order replacement information for the Series 800A Brush-on touch-up paint kit.	As required
System ground	1) Check all system ground connections. 2) Measure the ground resistance according to local approved methods. The ground to each resistance must be $\leq 25 \Omega$.	As required
Ground Fault Interrupt (GFI)	Test GFI for proper operation.	Follow local codes and test each time prior to use.
High and low temperature sensors	1) For the high temperature sensor, use a heat gun or hair dryer on the high temperature sensor and watch for the alarm; the coded alarm is a major alarm based on customer assigned alarm provisioning. 2) For the low temperature sensor, use a cooling/freezing spray on the low temperature sensor and watch for the alarm; the coded alarm is a major alarm based on customer assigned alarm provisioning (see Chapter 8, "Provisioning the external alarms").	As required
—end—		

Replacement parts

Table 12-2 lists the lists the replacement part numbers for the Series 800A cabinet.

Table 12-2
Replacement part numbers for the Series 800A cabinet

Item Description	Replacement Part Number
High temperature sensor	A0318483
Low temperature sensor	A0318484
Heater thermostat	A0618119
Fan thermostat	A0320836
Roof fan replacement kit	NT7A99EA/A0397513
Fan shelf, 3-fan	NT1W09CA/A0648797
Fan shelf, 8-fan	NT4K0610/A0646500
Door switch	A0361062
Door key	A0352639 (Wrench) A0352702 (Insert)
Filter replacement kit	NT7A6930/A0391171—For air induction roof NT7A6920/A0391170—For heat exchanger roof
Consumable spares kit	NIT4K29AA
GFI outlet	A0320821
Duplex outlet	A0300381
Heater outlet	A0353854
MPR-25 rectifier	NT5C06CA-3/A0366768
Door hinge and pin lubricant	R0112617, lithium grease, 24 oz. spray can R0115456, tan-colored waxy, solid grease stick
Touch-up paint kit	R0115917—DMS-Brown R0115497—Ivory R0115496—Bell Grey-Green

Procedure 12-1

Replacing the batteries

Use this procedure to replace batteries in an S800A cabinet that is currently carrying traffic.

If the batteries that are to be replaced are installed in a new installation or in a cabinet that is not in-service, see Chapter 9, “Installing and connecting the batteries” for battery installation.

Battery strings 1-12 will provide at least eight hours of battery back-up for a fully configured S800A system. Battery strings 13 and 14 may be used to provide additional battery back-up power.

The batteries require replacement:

- when an LVA alarm is generated significantly early (prior to eight hours) in the battery back-up mode
- during battery maintenance activities when the battery voltage is checked and deemed to low
- as listed in the battery manufacturer’s maintenance requirements

Requirements

The S800A system must be operating normally on rectifier power.

Test sets

A voltmeter RMS Fluke 8050A (or equivalent) test set is needed.

Tools required

A screwdriver, slotted, small (0.1-inch width) is required.

Documentation references

See NTP 169-2071-500.

—continued—

Procedure 12-1 (continued)
Replacing the batteries

Cautions

Read the following cautions before performing this procedure.

**CAUTION 1****Electrical shock hazard**

Any unused battery cables must be disconnected from the NT1W64AA battery breaker panel adapter to prevent potential electrical shock and/or equipment shorting.

**CAUTION 2****Battery string minimum requirements**

Always install a minimum of three battery strings in order to evenly distribute the charge current between circuit breakers of the battery breaker panel (BBP).

**CAUTION 3****Battery replacement requirements**

Battery packs must **not** be replaced on an individual basis. When one or more battery packs in the same string fail, replace **all** packs in that string with matched batteries having similar date codes.

**CAUTION 4****Fire hazard**

Remove all paper and any other combustible materials from inside the cabinet before the cabinet is powered up.

Failure to comply with this warning could result in a fire.

**CAUTION 5****Air flow baffle installation requirement**

Do NOT remove the air flow baffle installed in the electronics compartment. The air flow baffle directs air flow through the cabinet. The air flow baffle **must** be installed at all times during the operation of the cabinet.

—continued—

12-8 Cabinet maintenance operations

Procedure 12-1 (continued)
Replacing the batteries

Action

Step	Action
1	Turn the battery breaker panel (BBP) circuit breaker for the battery string(s) to be replaced to the OFF position (see Table 12-3).

Table 12-3
Battery string circuit breaker assignments

If quantity of battery strings (minimum of three) you are going to install is	Then turn these BBP circuit breakers to the OFF position
3	A1, A2, A3
4	A1, A2, A3, A4
5	A1, A2, A3, A4, A5
6	A1, A2, A3
7	A1, A2, A3, A4
8	A1, A2, A3, A4
9	A1, A2, A3, A4, B2
10	A1, A2, A3, A4, B2
11	A1, A2, A3, A4, B2, B3
12	A1, A2, A3, A4, B2, B3
13	A1, A2, A3, A4, B2, B3, B4
14	A1, A2, A3, A4, B2, B3, B4

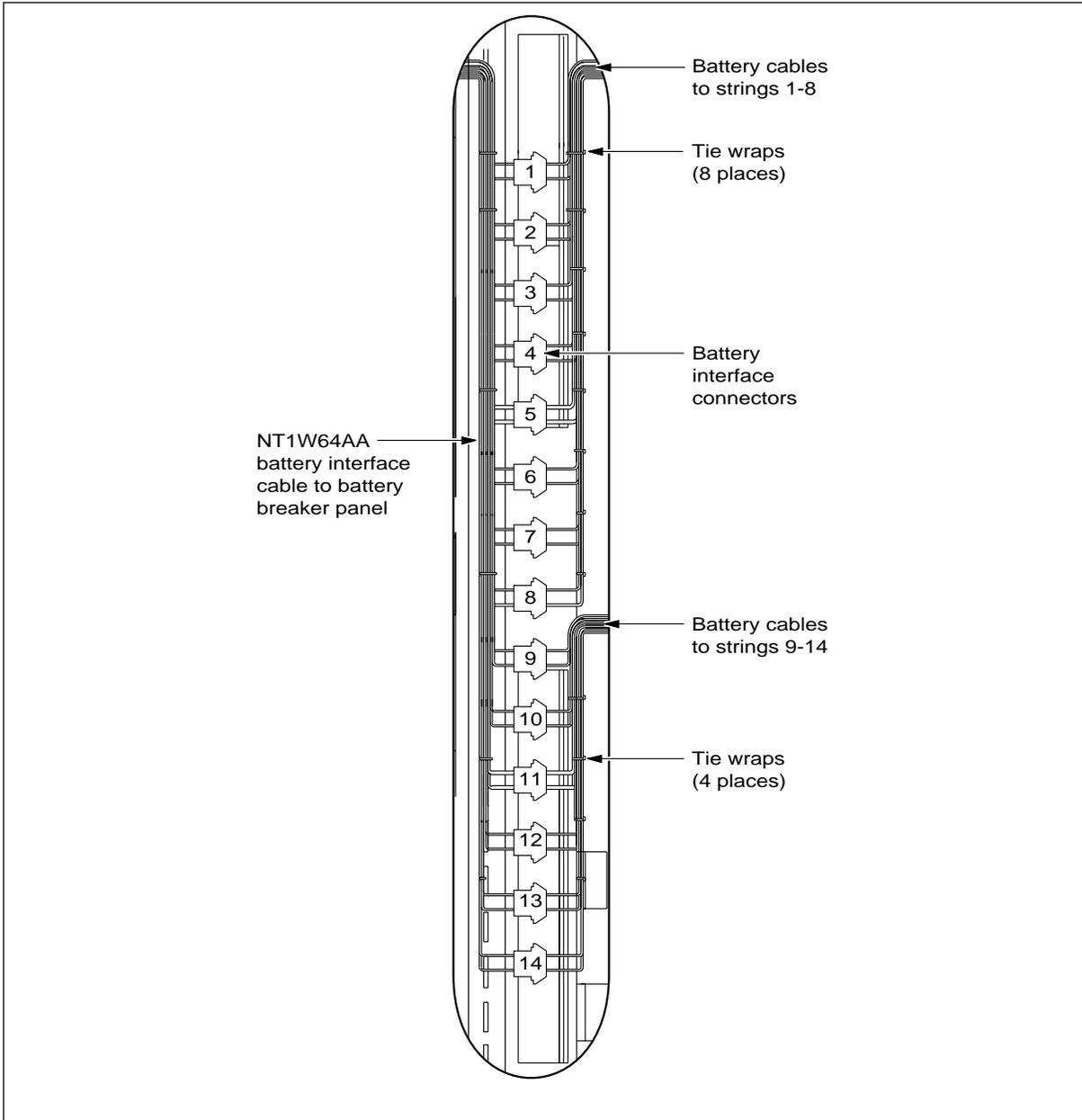
—continued—

Procedure 12-1 (continued)
Replacing the batteries

Step	Action
2	Disconnect the battery harness for the string to be replaced from the battery interface connector field (see Figure 12-1).

Figure 12-1
Battery interface connector field

FW-15155



—continued—

12-10 Cabinet maintenance operations

Procedure 12-1 (continued)

Replacing the batteries

Step	Action
------	--------

- | | |
|---|---|
| 3 | Measure the voltage between the terminals of each new battery pack.
Note: Any battery pack set that does not meet these requirements must be replaced (see CAUTION 3 on page 12-7). |
|---|---|

Table 12-4

Battery voltage check requirements

If the battery type is	Then the voltage reading must be
YUASA, 12 V dc	≥11.5 V dc on each 12 V battery pack
GATES, 12 V dc	≥11.5 V dc on each 12 V battery pack
EAGLE-PICHER, 6 V dc	≥ 5.75 V dc on each 6 V battery pack

- | | |
|----|---|
| 4 | Remove the battery straps from the battery shelf if the battery to be replaced is located in the swing frame. |
| 5 | Disconnect the battery harness from the battery string to be replaced. |
| 6 | Remove the complete battery string to be replaced (see CAUTION 3 on page 12-7).
Note: Each string consists of four, 12 V dc or eight, 6 V dc battery packs. |
| 7 | Install the new battery string into the space vacated by the old batteries.
Note: Ensure that the batteries are arranged properly. |
| 8 | Dress the battery harness neatly into the battery compartment between the batteries in such a manner that the cables are secure, free of kinks and twists and formed so that they do not catch or snag on the equipment swing frame as it is rotated to the closed position. |
| 9 | Connect the batteries installed in step 7 to the connectorized battery cable harness at the battery end.
Note: Each battery harness is labeled to correspond to the correct battery string. |
| 10 | Verify the integrity of the battery harness by checking for the proper battery voltage on each connector at the battery interface connector field end of the cable assembly.
Note: If a connector or battery cable assembly proves faulty (no voltage at the BBP end), replace the cable assembly and re-check for cable integrity. |

—continued—

Procedure 12-1 (continued)
Replacing the batteries

Step	Action
11	Connect the battery harness to the corresponding connector on the battery interface connector field (see Figure 12-1 on page 12-9). Note: The battery string numbers are labeled on each battery harness to correspond to the connections on the BBP adapter.
12	Reset the circuit breaker(s) A1-A4 and B2-B4 on the BBP that were turned OFF in step 1 to the ON position (see Table 12-3 on page 12-8).
13	Perform the steps in Table 12-5 as per the indication of the battery breaker panel circuit breakers:

Table 12-5
Battery breaker panel circuit breaker restoration steps

If the battery breaker panel circuit breaker	Then perform the following steps
Trips (with three rectifiers operating)	turn the ac circuit breaker on one rectifier to the OFF position. Go to step 12.
Trips (with two rectifiers operating)	turn the ac circuit breaker on one rectifier to the OFF position. Go to step 12.
Trips (with one rectifier operating)	insert the DVM into the rectifier test points (+V and BAT GND). Reduce the float voltage by turning the FLT potentiometer slightly and slowly counterclockwise for 1/4 turn. Go to step 12.
Does not trip	go to step 14.

—continued—

12-12 Cabinet maintenance operations

Procedure 12-1 (continued)

Replacing the batteries

Step	Action
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14	Allow the batteries to charge for 5-10 minutes.
----	---

15	Perform the following steps as per the number of rectifiers installed:
----	--

Table 12-6

Battery breaker panel circuit breaker replacement steps

If the number of rectifiers installed is	Then perform the following steps
Three (with one rectifier operating)	turn the ac circuit breaker on one other rectifier to the ON position so that two are operating. Go to step 16.
Three (with two rectifiers operating)	turn the ac circuit breaker on the last rectifier to the ON position so that three are operating. Go to step 16.
Three (with three rectifiers operating)	go to step 17.
Two (with one rectifier operating)	turn the ac circuit breaker on the last rectifier to the ON position so that three are operating. Go to step 16.
Two (with two rectifiers operating)	go to step 17.
One (with one rectifier operating)	go to step 17.

16	Allow the batteries 5-10 minutes charging time.
----	---

17	Ensure that all circuit breakers on the rectifiers are in the ON position.
----	--

18	Ensure that all circuit breakers on the battery breaker panel are in the ON position.
----	---

19	Ensure that all battery harnesses are dressed so that they do not catch on the swing frames when the swing frames are opened or closed.
----	---

20	Close the cabinet swing frames and doors.
----	---

—end—

Procedure 12-2

Replacing the rectifier

Use Procedure 12-2 through Procedure 12-6 on page 12-28 to replace rectifiers in an S800A cabinet that is currently carrying traffic. Begin with this procedure and continue the procedures in sequence until Procedure 12-6 is completed.

If the rectifiers that are to be replaced are installed in a new installation or in a cabinet that is not in-service, reference Chapter 10, “Adjusting the rectifier and the dc distribution shelf” for rectifier installation and adjustment.

Introduction

The Series 800A cabinet can be equipped with up to three NT5C06CA-3 MPR25 25A rectifier modules installed in the NT5C10CE rectifier shelf.

This procedure applies to a system that is equipped with one, two, or three rectifier modules.

Each rectifier is connected to a separate ac circuit breaker in the ac service panel.

Each rectifier module has an ac input and dc output circuit breaker on the faceplate.

The rectifier shelf dc output connects to the RECT input on the NT6C14--dc distribution shelf.

Test sets

A voltmeter RMS Fluke 8050A (or equivalent) test set is needed.

Tools required

A screwdriver, slotted, small (0.1-inch width) is required.

Documentation references

See NTP 169-2071-500.

Cautions

Prior to performing any rectifier replacement procedures, read each caution carefully. Important battery and rectifier information is presented here.

—continued—

Replacing the rectifier



CAUTION 1

Critical circuit breaker ON/OFF sequences

Perform the steps in the order shown because the sequence of turning the breakers on and off is critical.



CAUTION 2

Output voltage requirements

If this is a new installation, the dc voltage output level from each rectifier module **must** be tested and adjusted as per Nortel Networks recommended float voltages for the battery manufacturers listed below.

Eagle-Picher 6V: -54.70 ± 0.10 V dc

Gates 12V: -55.00 ± 0.10 V dc

Yuasa 12V: -54.00 ± 0.10 V dc

Note: These ranges are subject to change without notice. For other battery manufacturers, refer to CAUTION 3.



CAUTION 3

Input voltage requirements

The AccessNode input voltage specifications require that the dc input to the BIP shall not exceed -56.0 V dc. Battery float, equalize and high voltage shutdown levels **must** be set below this maximum regardless of the type of batteries installed.



CAUTION 4

Power loss hazard

Because there are circuit breakers on the ac service panel, rectifier modules, and the battery breaker panel (BBP), use caution before switching a circuit breaker. Make sure you are switching the correct one.



CAUTION 5

Fire hazard

Remove all paper and any other combustible materials from inside the cabinet before the cabinet is powered up. Failure to comply with this warning could result in a fire.

—continued—

Procedure 12-2 (continued)
Replacing the rectifier

Action

Step	Action
------	--------

Preparing to remove the defective rectifier

- 1 Verify that the battery circuit breakers on the BBP are in the ON position.
- 2 Switch the ac circuit breakers on all rectifiers to the OFF position (see Figure 12-2 on page 12-16).
- 3 Switch the dc circuit breakers on all rectifiers to the OFF position.
- 4 Switch the RECT1, RECT2 and RECT3 ac circuit breakers in the ac load box (or ac power pedestal, if installed) to the OFF position.

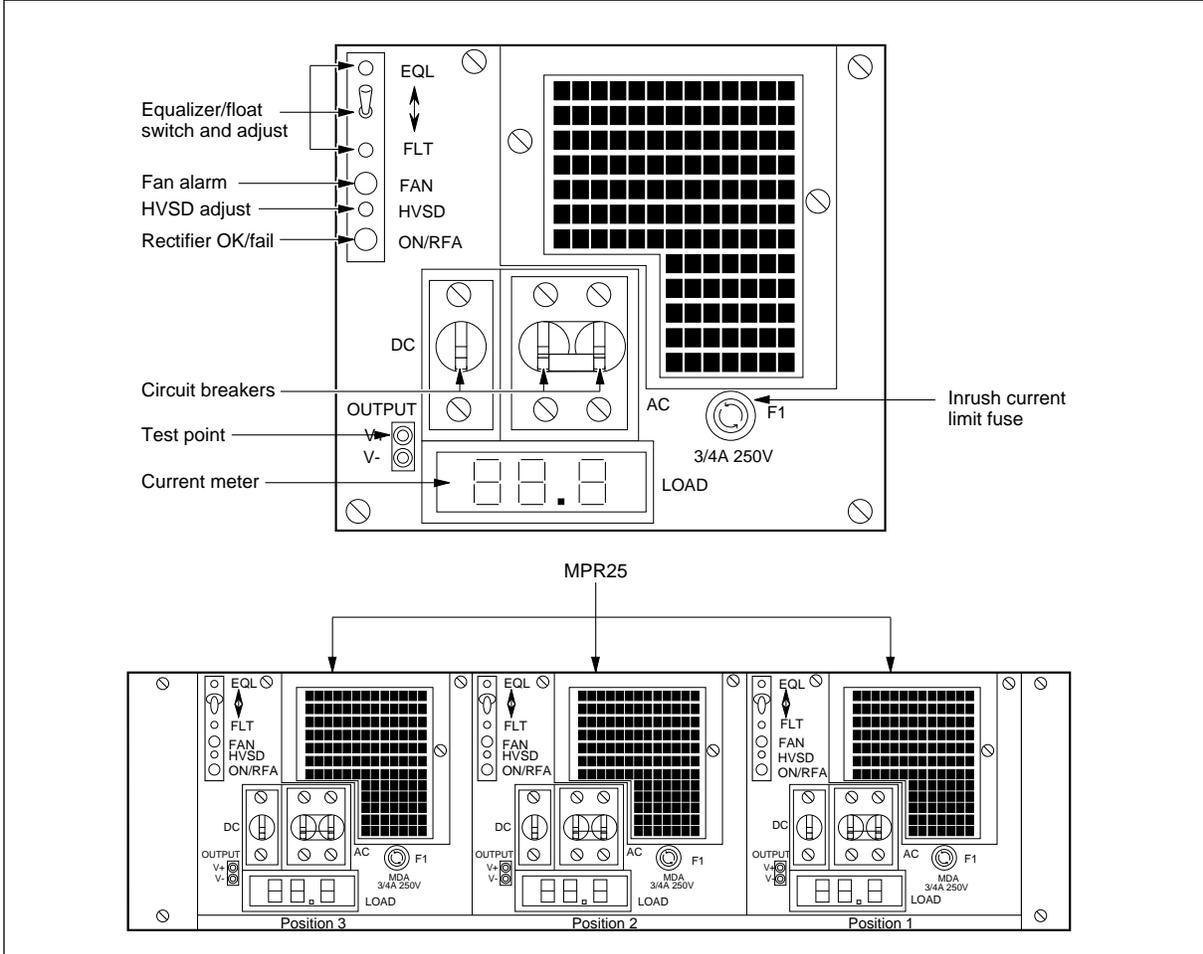
—continued—

12-16 Cabinet maintenance operations

Procedure 12-2 (continued)
Replacing the rectifier

Figure 12-2
NT5C10CE rectifier shelf with three MPR25 (NT5C06) rectifiers

FW-11328



—continued—

Procedure 12-2 (continued)
Replacing the rectifier

Step	Action
Removing the defective rectifier	
5	Loosen the two thumb screws on the bottom left and right side of the rectifier shelf (see Figure 12-2 on page 12-16).
6	Fold-down the hinged retainer bracket (see Figure 12-2 on page 12-16).
7	Remove the rectifier module being replaced by sliding it out of the rectifier shelf.
Inserting a new rectifier	
8	Insert a new rectifier module into the same slot of the rectifier shelf as from which the defective rectifier was removed.
9	Push the rectifier module into the shelf until the connector on the back is seated firmly within the rectifier shelf connector.
10	Switch the ac circuit breaker for the replacement rectifier (RECT1, RECT2 or RECT3) in the ac load box (or ac power pedestal, if installed) to the ON position. Note: The rectifier positions are numbered right to left with position #1 on the far right side of the shelf.
11	Flip-up the hinged retainer bracket on the rectifier shelf and secure it by tightening two thumb screws on the left and right side.
Powering the new rectifier	
12	Switch the dc circuit breaker on the replacement rectifier to the ON position. Note: The dc circuit breaker on the rectifier must be turned ON before the ac circuit breaker is turned ON.
13	Switch the ac circuit breaker on the replacement rectifier to the ON position. Note: When the rectifier is initially powered ON, the fail alarm (ON/RFA) LED illuminates red. When the rectifier is operational, the RFA LED illuminates green.

—continued—

12-18 Cabinet maintenance operations

Procedure 12-2 (continued)

Replacing the rectifier

Step Action

14 Perform the following steps as per the RFA LED indication on the rectifiers:

Table 12-7

RFA LED indication recovery steps

If the RFA LED indicates	Then perform these steps
Red after 15 seconds	<ul style="list-style-type: none">• Verify the in-rush fuse.• If the fuse is faulty replace the fuse and go to step 13.• If the fuse is good reinsert the fuse.• Go to step 5.
Green	<ul style="list-style-type: none">• Go to step 15.

15 Continue the rectifier adjustments with Procedure 12-3 on page 12-19.

—end—

Procedure 12-3

Adjusting the high voltage shutdown for replacement rectifiers

Use this procedure to adjust a replacement rectifier for high voltage shutdown in an S800A cabinet that is currently carrying traffic.

If the rectifiers that are to be replaced are installed in a new installation or in a cabinet that is not in-service, reference Chapter 10, “Adjusting the rectifier and the dc distribution shelf” for rectifier installation and adjustment.



CAUTION 1

Service affecting procedures

This procedure is service affecting. Perform the high voltage shutdown adjustment procedures during low traffic hours.

Cautions

Observe all cautions listed in Procedure 12-2 on page 12-13.

Test sets

A voltmeter RMS Fluke 8050A (or equivalent) test set is needed.

Tools required

A screwdriver, slotted, small (0.1-inch width) is required.

Documentation references

See NTP 169-2071-500.

—continued—

Procedure 12-3 (continued)

Adjusting the high voltage shutdown for replacement rectifiers

Rectifier and battery adjustments and connections

Table 12-8 shows the Nortel Networks recommended rectifier settings for the optional battery selections.

Table 12-8
Rectifier adjustment settings

Battery manufacturer	High voltage shutdown (HVSD)	Equalize (EQL)	Float (FLT)	Low voltage alarm (LVA)	Low voltage disconnect (LVD)
Gates	-56.0 ± 0.1	-55.5 ± 0.1	-55.0 ± 0.1	-47.0 ± 0.1	-43.0 ± 0.1
Eagle-Picher	-56.0 ± 0.1	-55.4 ± 0.1	-54.7 ± 0.1	-47.0 ± 0.1	-43.0 ± 0.1
Yuasa	-56.0 ± 0.1	-54.0 ± 0.1	-54.0 ± 0.1	-47.0 ± 0.1	-43.0 ± 0.1

Note: Batteries are individually fused on the battery breaker panel.

Action

Step	Action
1	Turn the circuit breakers on the battery breaker panel to the OFF position. <i>Note:</i> On the faceplate of the rectifier module are test points labeled outputs V+ and V- (see Figure 12-3 on page 12-21).
2	Insert the test leads of the digital voltmeter (DVM) into the test points (negative to negative, positive to positive).
3	Set the EQL/ FLT switch on the rectifier to the FLT position.

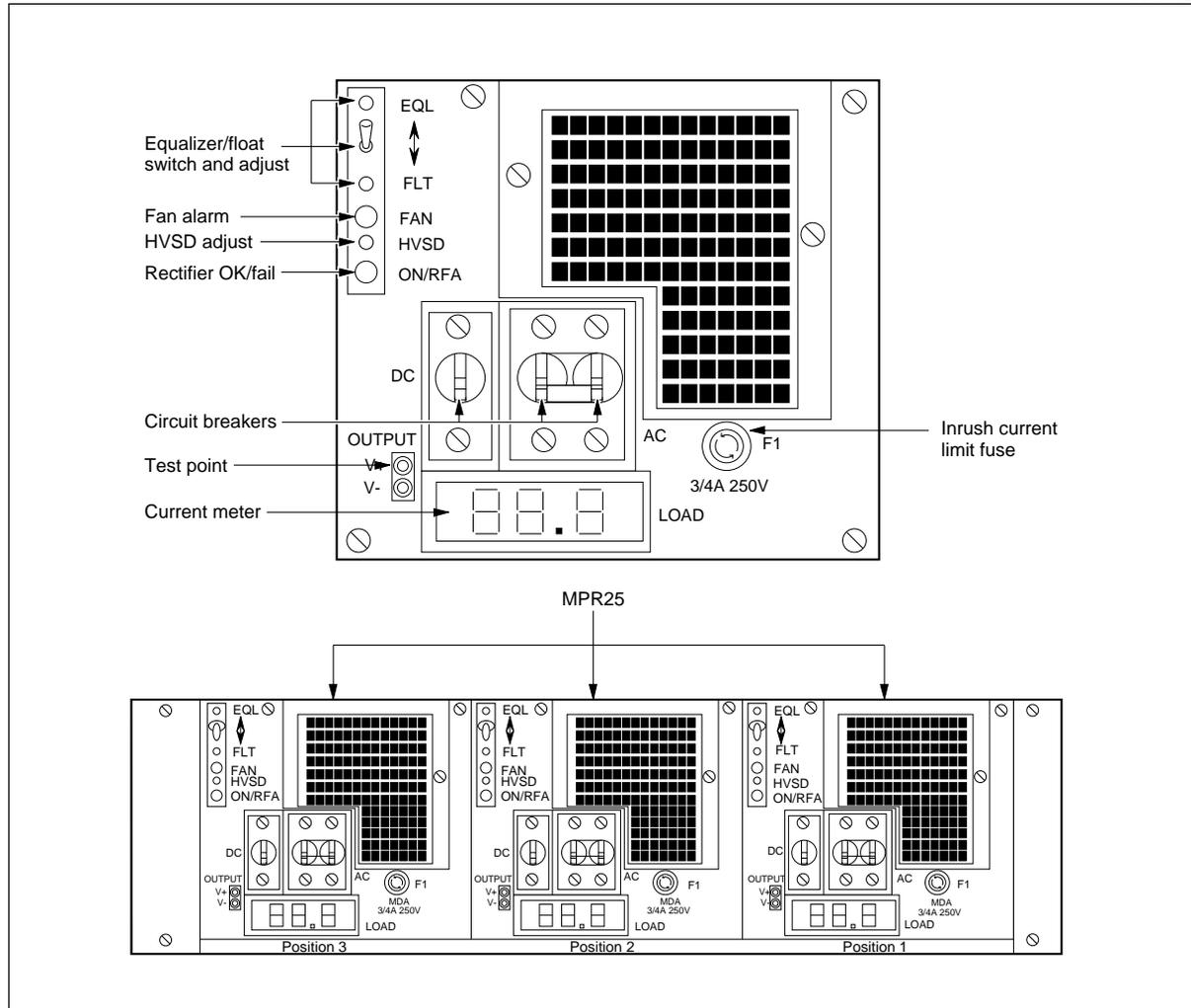
—continued—

Procedure 12-3 (continued)

Adjusting the high voltage shutdown for replacement rectifiers

Figure 12-3
NT5C10CE rectifier shelf with three MPR25 (NT5C05CA-3) rectifiers

FW-11328



—continued—

Procedure 12-3 (continued)

Adjusting the high voltage shutdown for replacement rectifiers

Step Action

4 Verify the voltage reading on the DVM:

If the voltage reading on the DVM is	Then SLOWLY adjust the FLT potentiometer
> -56.0 V dc	counterclockwise until the DVM reads -56.0 V dc (see CAUTION 2 on page 12-22). Go to step 5.
< -56.0 V dc	clockwise until the DVM reads -56.0 V dc (see CAUTION 2 on page 12-22). Go to step 5.
= to -56.0 V dc	go to step 11.



CAUTION 2

Battery stabilization requirements

When increasing or decreasing the float voltage on a working system with batteries connected, always proceed very slowly. Only turn the float potentiometer 1/4 turn at any one time then allow the batteries to stabilize before adjusting the FLT potentiometer again. The batteries require a period of time to stabilize to the new voltage and current levels.



CAUTION 3

Overvoltage damage to equipment

Do NOT adjust the voltage above -56.0 V dc as damage to the AccessNode equipment may result.

5 Slowly and slightly adjust the HVSD potentiometer by turning it counterclockwise to decrease the HVSD level until HVSD occurs.

Note: The ON/RFA LED illuminates red and the rectifier shuts down.

6 Record the voltage measurement.

7 Turn the FLT POT counterclockwise to reduce the voltage (about two turns).

8 Reset the ac breaker to the ON position.

—continued—

 Procedure 12-3 (continued)

Adjusting the high voltage shutdown for replacement rectifiers

Step Action

- 9** Watch the DVM readings and slowly (see CAUTION 2 on page 12-22) adjust the FLT potentiometer clockwise to increase the float voltage until either -56.0 V dc is reached or High Voltage Shutdown (HVSD) occurs.

Note 1: The ON/RFA LED illuminates red and the rectifier shuts down. Record the voltage measurement.

Note 2: If the -56.0 V level cannot be reached, hold the FLT/EQL switch in the EQL position while adjusting the FLT potentiometer.

- 10** Verify the HVSD level:

If the HVSD	Then
Occurred at -56.0 V dc	go to step 11.
Occurred before -56.0 V dc	slowly and slightly adjust the HVSD potentiometer clockwise to increase the HVSD limit. Go to step 7.
Did not occur before -56.0 V dc was reached	slowly and slightly adjust the HVSD potentiometer counterclockwise to decrease the HVSD limit. Go to step 7.

- 11** Continue rectifier adjustments by using Procedure 12-4 on page 12-24.

—end—

Procedure 12-4

Setting the equalize voltage level

Use this procedure to adjust a replacement rectifier for equalize (EQL) voltage in an S800A cabinet that is currently carrying traffic.

If the rectifiers that are to be replaced are installed in a new installation or in a cabinet that is not in-service, reference Chapter 10, “Adjusting the rectifier and the dc distribution shelf” for rectifier installation and adjustment.

Cautions

Observe all cautions listed in Procedure 12-2 on page 12-13.

Test sets

A voltmeter RMS Fluke 8050A (or equivalent) test set is needed.

Tools required

A screwdriver, slotted, small (0.1-inch width) is required.

Documentation references

See NTP 169-2071-500.

Rectifier and battery adjustments and connections

Table 12-9 shows the Nortel Networks recommended rectifier settings for the optional battery selections.

Table 12-9
Rectifier adjustment settings

Battery manufacturer	High voltage shutdown (HVSD)	Equalize (EQL)	Float (FLT)	Low voltage alarm (LVA)	Low voltage disconnect (LVD)
Gates	-56.0 ± 0.1	-55.5 ± 0.1	-55.0 ± 0.1	-47.0 ± 0.1	-43.0 ± 0.1
Eagle-Picher	-56.0 ± 0.1	-55.4 ± 0.1	-54.7 ± 0.1	-47.0 ± 0.1	-43.0 ± 0.1
Yuasa	-56.0 ± 0.1	-54.0 ± 0.1	-54.0 ± 0.1	-47.0 ± 0.1	-43.0 ± 0.1

Note: Batteries are individually fused on the BBP.

—continued—

Procedure 12-4 (continued)
Setting the equalize voltage level

Action

Step	Action
------	--------

**CAUTION****Battery stabilization requirements**

When increasing or decreasing the float voltage on a working system with batteries connected, always proceed very slowly. Only turn the float potentiometer 1/4 turn at any one time then allow the batteries to stabilize before adjusting the FLT potentiometer again. The batteries require a period of time to stabilize to the new voltage and current levels.

- 1 Turn the FLT POT counterclockwise to reduce the voltage (about two turns).
- 2 Adjust the EQL POT counterclockwise two full turns.
- 3 Reset the ac breaker to the ON position.
- 4 Hold the FLT/EQL momentary switch to EQL position.
- 5 Watch the DVM readings and slowly adjust the FLT potentiometer clockwise to increase the EQL voltage to -55.5 V dc.
- 6 Release the FLT/EQL switch.
- 7 Continue rectifier replacement procedures with Procedure 12-5 on page 12-26.

—end—

Procedure 12-5

Adjusting the float voltage

Use this procedure to adjust a replacement rectifier for float voltage in an S800A cabinet that is currently carrying traffic.

If the rectifiers that are to be adjusted are installed in a new installation or in a cabinet that is not in-service, reference Chapter 10, “Adjusting the rectifier and the dc distribution shelf” for rectifier installation and adjustment.

Cautions

Observe all cautions listed in Procedure 12-2 on page 12-13.

Test sets

A voltmeter RMS Fluke 8050A (or equivalent) test set is needed.

Tools required

A screwdriver, slotted, small (0.1-inch width) is required.

Documentation references

See NTP 169-2071-500.

Rectifier and battery adjustments and connections

Table 12-10 shows the Nortel Networks recommended rectifier settings for the optional battery selections.

Table 12-10
Rectifier adjustment settings

Battery manufacturer	High voltage shutdown (HVSD)	Equalize (EQL)	Float (FLT)	Low voltage alarm (LVA)	Low voltage disconnect (LVD)
Gates	-56.0 ± 0.1	-55.5 ± 0.1	-55.0 ± 0.1	-47.0 ± 0.1	-43.0 ± 0.1
Eagle-Picher	-56.0 ± 0.1	-55.4 ± 0.1	-54.7 ± 0.1	-47.0 ± 0.1	-43.0 ± 0.1
Yuasa	-56.0 ± 0.1	-54.0 ± 0.1	-54.0 ± 0.1	-47.0 ± 0.1	-43.0 ± 0.1

Note: Batteries are individually fused on the BBP.

—continued—

Procedure 12-5 (continued)
Adjusting the float voltage

Action

Step	Action
1	Set the EQL/FLT switch to the FLT position.
2	The EQL/FLT switch on the rectifier must be in the FLT position when adjusting the float voltage.
3	Insert the test leads of the digital voltmeter (DVM) into the test points (negative to negative, positive to positive). Note: On the faceplate of the rectifier module are test points labeled outputs V+ and V- (see Figure 12-4 on page 12-29).
4	Slowly adjust the FLT potentiometer clockwise to raise the float voltage or counterclockwise to lower the float voltage to the level proscribed by the battery manufacturer (see Table 12-10 on page 12-26).
5	Continue rectifier replacement procedures with Procedure 12-6 on page 12-28.

—end—

Procedure 12-6

Adjusting the load sharing for replacement rectifiers

Use this procedure to adjust the load sharing of the replacement rectifier.

If the rectifiers that are to be replaced are installed in a new installation or in a cabinet that is not in-service, reference Chapter 10, “Adjusting the rectifier and the dc distribution shelf” for rectifier installation and adjustment

Documentation references

See NTP 169-2071-500.

Test sets

A voltmeter RMS Fluke 8050A (or equivalent) test set is needed.

Tools required

A screwdriver, slotted, small (0.1-inch width) is required.

Cautions

Observe all cautions listed in Procedure 12-2 on page 12-13.

Rectifier and battery adjustments and connections

Table 12-11 shows the Nortel Networks recommended rectifier settings for the optional battery selections.

Table 12-11
Rectifier adjustment settings

Battery manufacturer	High voltage shutdown (HVSD)	Equalize (EQL)	Float (FLT)	Low voltage alarm (LVA)	Low voltage disconnect (LVD)
Gates	-56.0 ± 0.1	-55.5 ± 0.1	-55.0 ± 0.1	-47.0 ± 0.1	-43.0 ± 0.1
Eagle-Picher	-56.0 ± 0.1	-55.4 ± 0.1	-54.7 ± 0.1	-47.0 ± 0.1	-43.0 ± 0.1
Yuasa	-56.0 ± 0.1	-54.0 ± 0.1	-54.0 ± 0.1	-47.0 ± 0.1	-43.0 ± 0.1

Note: Batteries are individually fused on the BBP.

—continued—

Procedure 12-6 (continued)
Adjusting the load sharing for replacement rectifiers

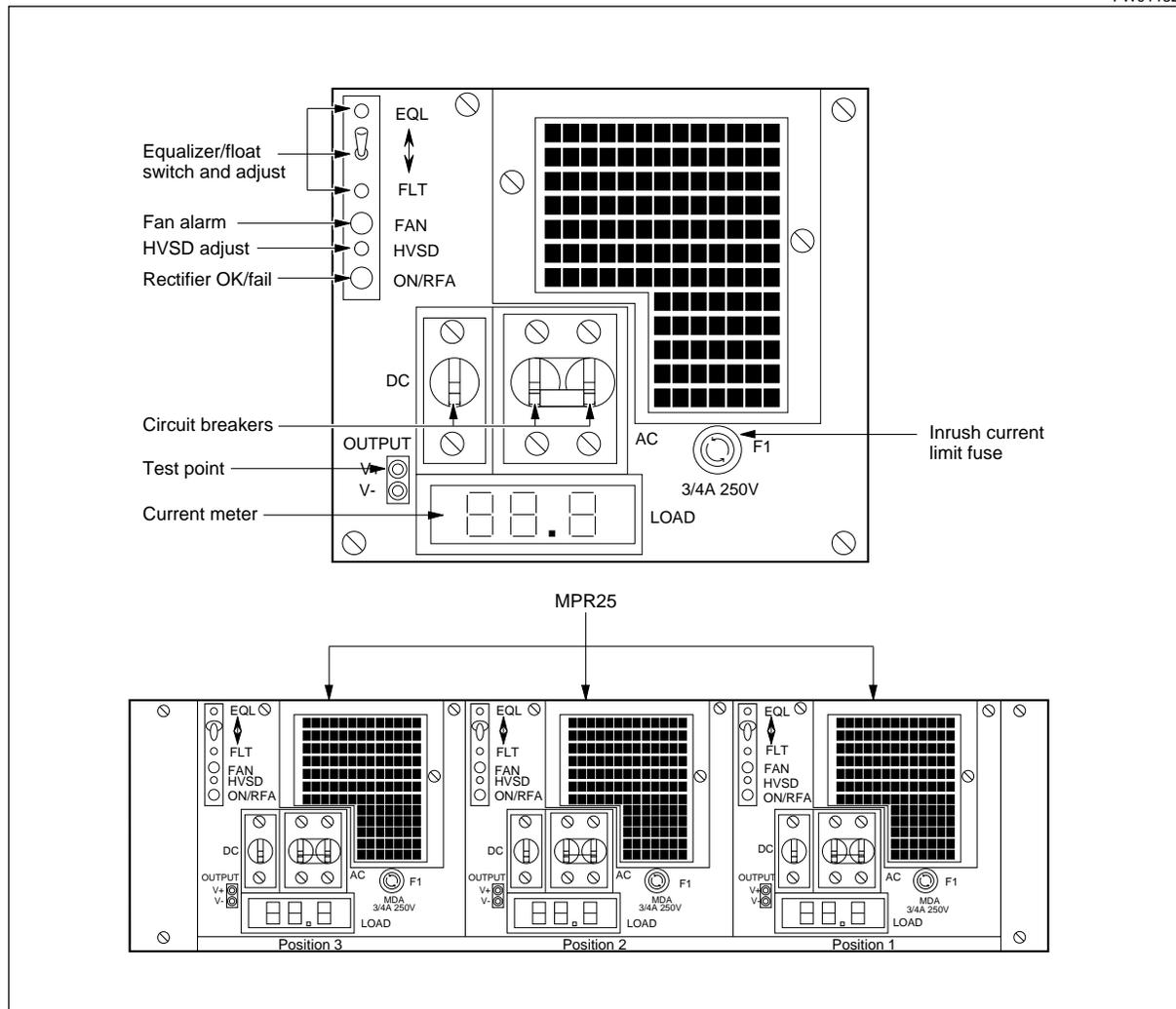
Action

Step Action

- 1 Examine all rectifiers for the status of the RFA LEDs (see Figure 12-4).

Figure 12-4
NT5C10CE rectifier shelf with three MPR25 (NT5C05CA-3) rectifiers

FW011328



—continued—

Procedure 12-6 (continued)

Adjusting the load sharing for replacement rectifiers

Step Action

- 2** Perform the load sharing adjustment steps shown in Table 12-12.
Note: Table 12-12 lists the RFA LED indications and the associated steps to coarsely adjust the load sharing of multiple rectifiers.

Table 12-12
Rectifier load sharing adjustments

If the RFA LED indication is that	And the number of rectifiers installed is	Then the indication means	Then perform these steps
Only one RFA LED illuminated GREEN	two	that the rectifier with the GREEN RFA LED is floating slightly too high	slowly and <u>very slightly</u> adjust the FLT potentiometer of the rectifier that has the RFA LED illuminated GREEN counterclockwise until the RFA LEDs of at least one of the other rectifiers illuminate GREEN. Go to step 3.
Only two RFA LEDs illuminated GREEN	three	that the rectifier with the RED RFA LED is floating slightly too low	slowly and <u>very slightly</u> adjust the FLT potentiometer of the rectifier that has the RFA LED illuminated RED clockwise until the RFA LED illuminates GREEN. Go to step 3.
All installed rectifier RFA LEDs illuminated GREEN	any number of rectifiers	that the rectifiers are sharing the load closely	go to step 4.

- 3** Repeat from step 1 until all rectifiers RFA LED are illuminated GREEN.
4 Examine and compare the display of the ammeters on the rectifiers.
Note: Nortel Networks recommends that the ammeters of all installed rectifiers read within 0.1 V dc of each other for proper load sharing.

—continued—

Procedure 12-6 (continued)

Adjusting the load sharing for replacement rectifiers

Step	Action
5	<p>Adjust the FLOAT voltage of the rectifier that has the lowest current reading on the rectifier ammeter display by:</p> <ul style="list-style-type: none">slowly and <u>very slightly</u> adjusting the FLT potentiometer clockwise until the ammeter reading is no longer the lowest of the installed rectifiers. <p>Note: The FLT potentiometer load sharing adjustment is very sensitive. Small adjustments can reflect large changes in the ammeter readings.</p>
6	<p>Adjust the FLOAT voltage of the rectifier that has the highest current reading on the rectifier ammeter display by:</p> <ul style="list-style-type: none">slowly and <u>very slightly</u> adjusting the FLT potentiometer counterclockwise until the ammeter reading is no longer the highest of the installed rectifiers. <p>Note: The FLT potentiometer load sharing adjustment is very sensitive. Small adjustments can reflect large changes in the ammeter readings.</p>
7	<p>Repeat from step 4 until all rectifiers have RFA LED illuminated GREEN and the ammeter displays all read within 0.1 A of each other.</p>

—end—

Procedure 12-7

Connecting emergency standby power - ac load box option with mechanical interlock

Use this procedure to connect emergency standby power to the S800A cabinet when the ac load box with a mechanical interlock system is installed.

Each rectifier requires 2500 watts at 220 volts of emergency generator power.

Generators equipped with GFI protection can be used in this application; if the GFI is disabled, the generator cannot be used. The GFI is typical of small, noncommercial type generators.

Tools required

There are no special tools required to perform this procedure.

Action

Step	Action
1	Open the cabinet right side ac compartment door.
2	Fully engage the door restraint bar.
3	Turn the 60 A MAIN circuit breaker to ON so that the 30 A EMERGENCY POWER circuit breaker is OFF (see Figure 12-5 on page 12-33).
4	Locate the emergency connector on the bottom panel below the ac load center (see Figure 12-6 on page 12-34).
5	Remove the cover from the emergency generator connector. Note: Hubbell connectors have a flip cap; Crouse-Hinds connectors have a screw-on cover.
6	Plug in the mating female Hubbell or Crouse-Hinds connector from the available generator.
7	Power-up the emergency generator.
8	Allow it to stabilize for at least five minutes (follow local practices).
9	Turn the 60 A MAIN circuit breaker to OFF so that the 30 A EMERGENCY POWER circuit breaker is ON (see Figure 12-5 on page 12-33).
10	Release the door restraining rod.
11	Close the ac compartment door.
12	Emergency standby power is now connected.

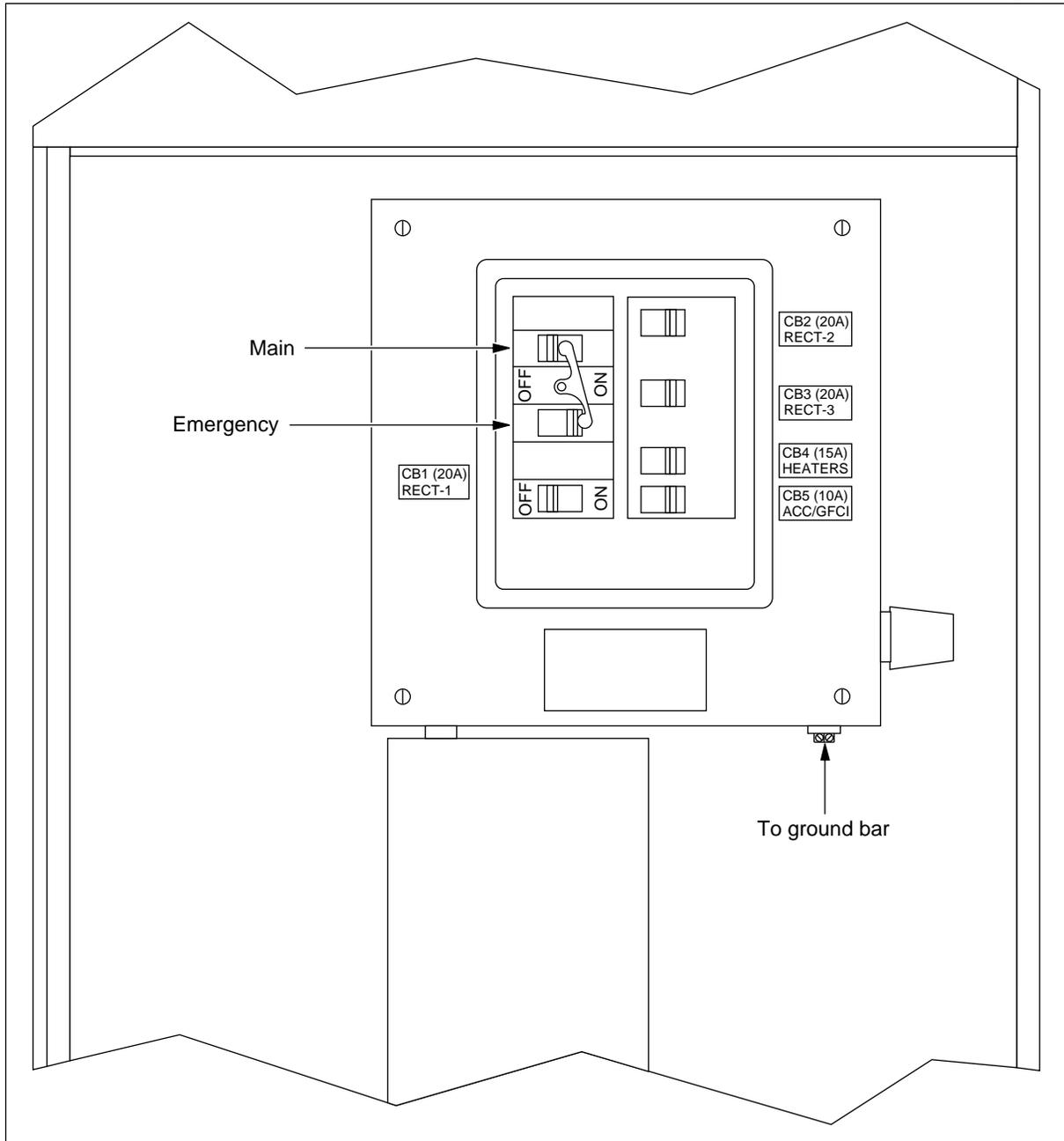
—continued—

Procedure 12-7 (continued)

Connecting emergency standby power - ac load box option with mechanical interlock

Figure 12-5
AC load cover

FW-15159



—continued—

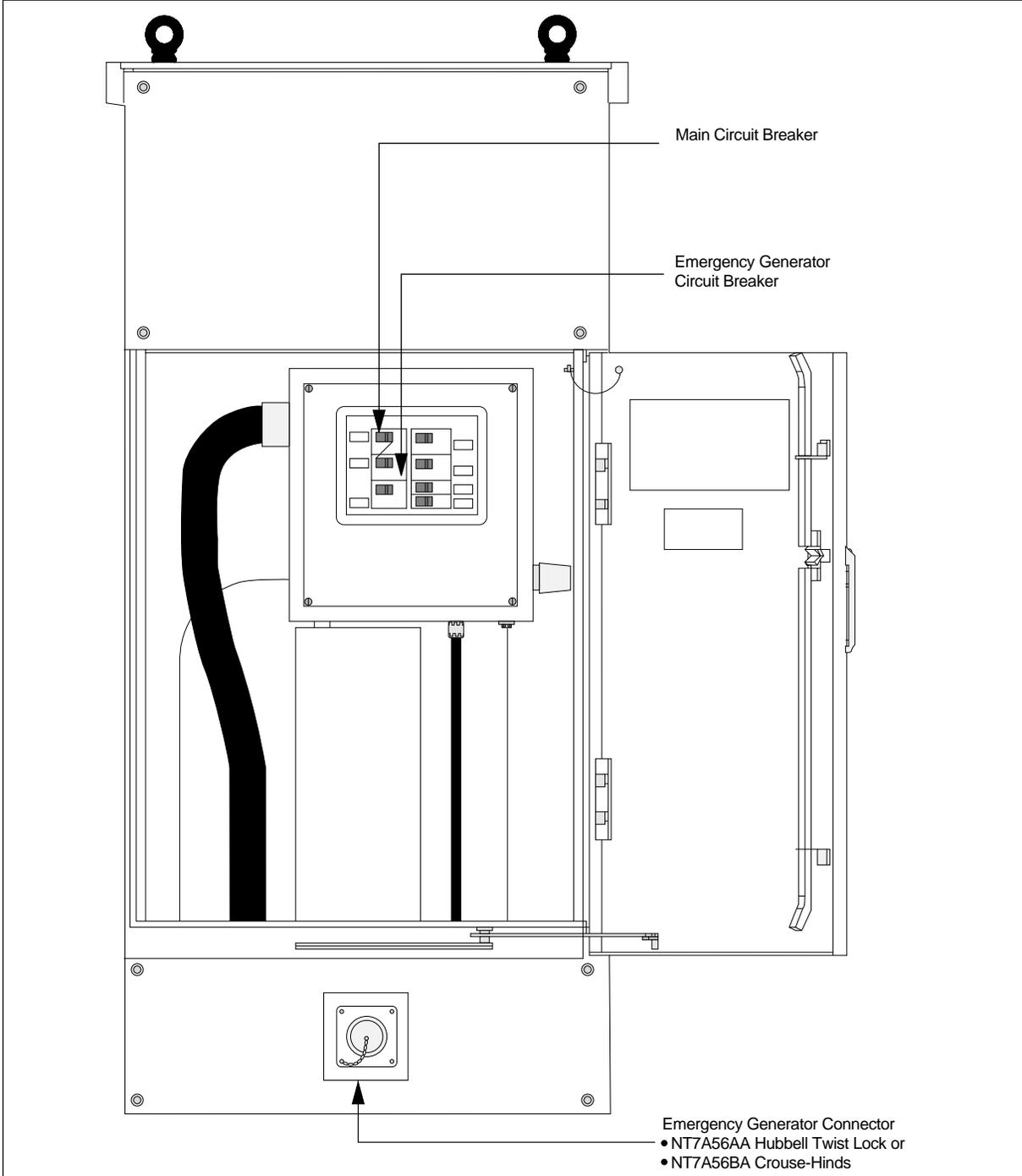
12-34 Cabinet maintenance operations

Procedure 12-7 (continued)

Connecting emergency standby power - ac load box option with mechanical interlock

Figure 12-6
View of the ac compartment with a mechanical interlock

FW-15065



—end—

Procedure 12-8

Connecting emergency standby power - attached ac power pedestal option

This procedure explains how to attach the emergency generator power to the S800A cabinet when the ac power pedestal is installed.

Each rectifier requires 2500 watts at 220 volts of emergency generator power.

Generators equipped with GFI protection can be used in this application; if the GFI is disabled, the generator cannot be used.

The GFI is typical of small, noncommercial type generators.

Tools required

There are no special tools required to perform this procedure.

Action

Step	Action
1	Open the cabinet right side ac power pedestal door to fully engage the restraining bar.
2	Turn the 60 A EMERGENCY circuit breaker located on the top center access panel to the OFF position (see Figure 12-7 on page 12-37).
3	Actuate the knife switch lever to the CENTER OFF position.
4	Locate the emergency connector on the left side of the power pedestal (see Figure 12-7 on page 12-37).
5	Use the AT&T-type #216 craft-access tool to unlock the tamper resistant screw on the Hubbell connector locking collar.
6	Remove the locking cap.
7	Plug in the mating female Hubbell connector from the available generator and screw in the locking collar.
	Note: If desired, use the AT&T-type #216 craft-access tool to tighten the tamper resistant screw on the Hubbell locking collar.

—continued—

12-36 Cabinet maintenance operations

Procedure 12-8 (continued)

Connecting emergency standby power - attached ac power pedestal option

Step	Action
8	Power up the emergency generator.
9	Allow the generator to stabilize for at least five minutes (follow local practices).
10	Turn ON the 60 A emergency circuit breaker located on the top center access panel.
11	Actuate the knife-switch lever to the BOTTOM EMERGENCY power position.
12	Release the door restraining rod and close the ac compartment door.
13	Emergency standby power is now connected.

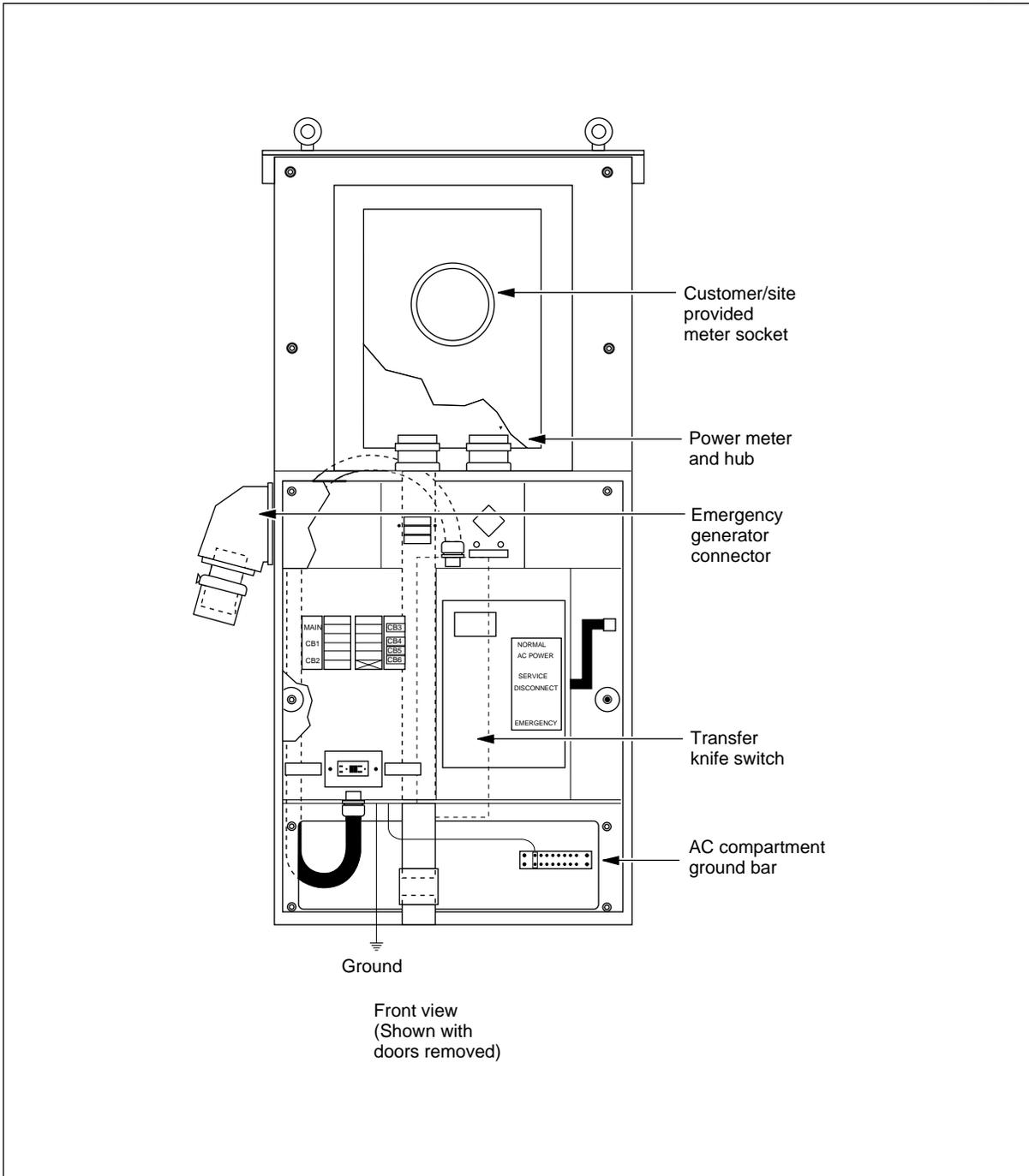
—continued—

Procedure 12-8 (continued)

Connecting emergency standby power - attached ac power pedestal option

Figure 12-7
View of the ac compartment with an attached power pedestal

FW-15167



—end—

Procedure 12-9 Installing the jumper wire spool

This procedure explains how to install a jumper wire spool for use with the cross-connect facility in the termination compartment.

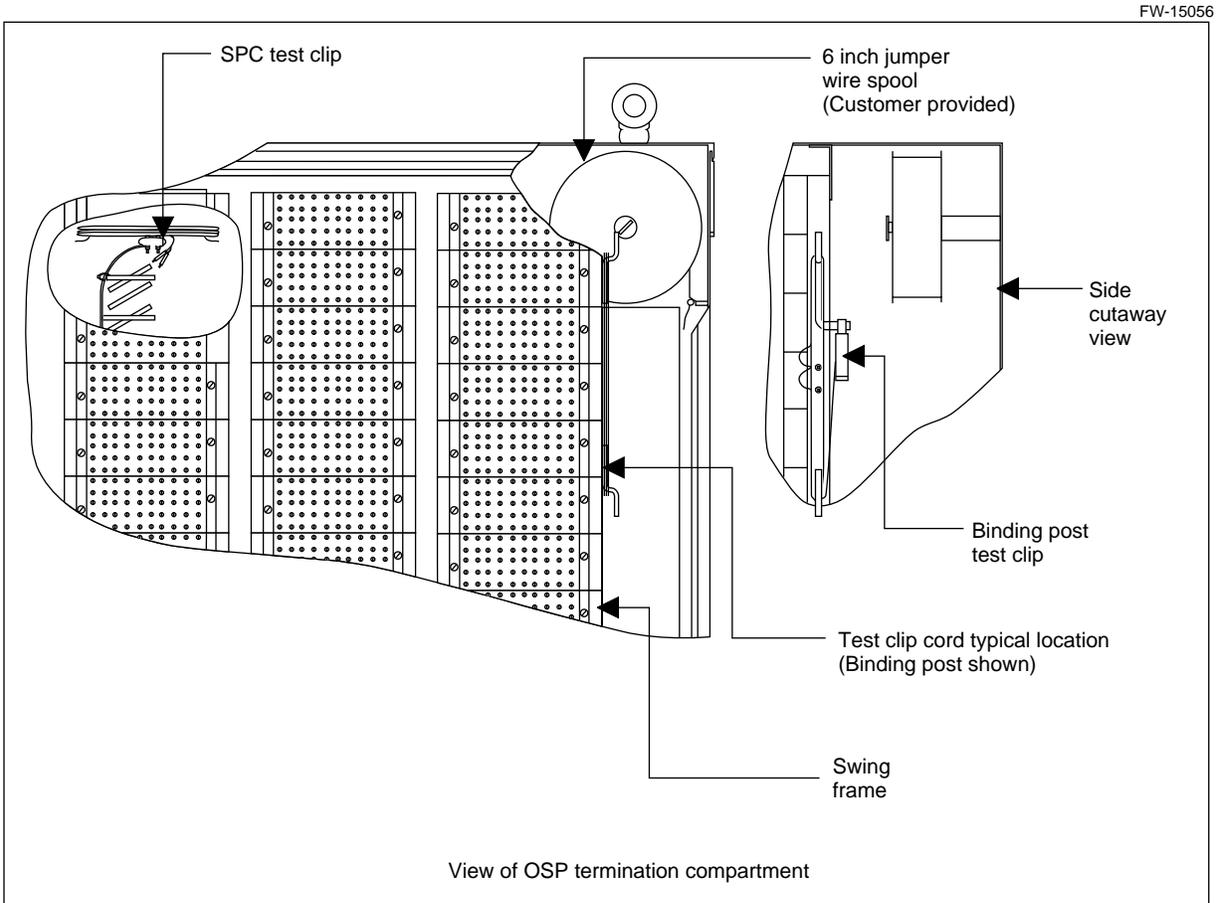
Tools required

There are no special tools required to perform this procedure.

Action

Step	Action
1	Open the termination door and engage the restrainer bar.
2	Install the wire spool on the spindle as shown in Figure 12-8.

Figure 12-8
Location of the jumper wire spool and the cross-connect test clips



—end—

Procedure 12-10

Using the BIX or binding post test clips

This procedure explains how to use the BIX or binding post test clips that are available for use with the BIX or binding post serving area interface.

The test clip is located on the right side of the swing frame in the termination compartment (see Figure 12-8 on page 12-38).

Tools required

There are no special tools required to perform this procedure.

Action

Step	Action
1	Connect the test set to the terminal end of the test cord.
2	Plug the test clip on the connector under test by pressing it against the pair to be tested.
3	After testing is complete, pull out the clip and replace it on the side of the swing frame.

—end—

Procedure 12-11

Using the protector test access cord

This procedure explains the location of the protector test access cord and how to use it.

Tools required

There are no special tools required to perform this procedure.

Action

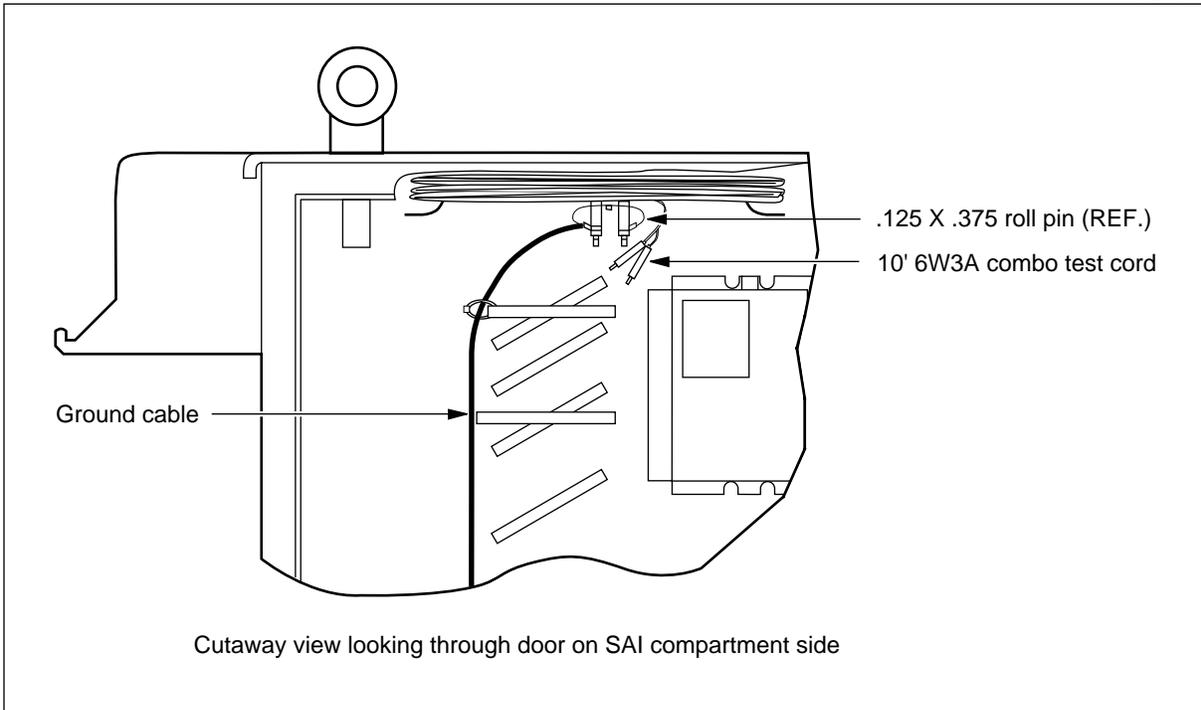
Step	Action
1	Open the termination door.
2	Engage the restrainer bar. Note: The protector cord and test clip wires are located behind the swing frame, at the top left side of SPC 5. The test clip wires are wrapped around a mounting bracket (see Figure 12-9 on page 12-41).
3	Connect the test equipment to the station protector. <div style="border: 1px solid black; padding: 5px;"><p>CAUTION Service affecting procedure This next step is service affecting. The customer is disconnected and the line is dropped. Perform this procedure during periods of low traffic.</p></div>
4	Loosen the thumbscrews and open the SPC cover.
5	Remove the protector for the pair to be tested.
6	Plug the test cord in its place.
7	Replace the protector and SPC cover after the test.
8	Return the test cord to the mounting bracket.
9	Close the termination compartment doors.

—continued—

Procedure 12-11 (continued)
Using the protector test access cord

Figure 12-9
View of the protector test access cord

FW-15160



—end—

Procedure 12-12

Replacing an internal fan unit in the heat exchanger roof

This procedure explains how to replace an internally mounted fan unit in the Series 800A cabinet with the NT7A69DA-FA heat exchanger roof options.

Note: Fan replacement *must* be completed within four hours of failure. Equipment or service outages may result due to excessive heat build-up in the cabinet.



CAUTION

Fire hazard

Remove all paper and any other combustible materials from inside the cabinet before the cabinet is powered up. Failure to comply with this warning could result in a fire.

Tools required

- can wrench (216 tool) with Harris insert part number 10660-001 (tool and insert shipped inside the cabinet)
- stubby Phillips head screwdriver
- 5-foot step ladder

Action

Step	Action
1	Open the electronics compartment doors (on the front side).
2	Turn OFF circuit breakers CU A and CU B on the BIP.
3	Open the equipment bay frames and locate the defective fan (see Figure 12-10 on page 12-43).
4	Replace the fan by removing the two screws and fan grill.
5	Disconnect the fan connector from fan wiring harness. Note: Do not discard or misplace the two screws and fan grill.
6	Install the new fan using the screws and fan grill removed in step 4.
7	Plug fan connector back into fan wiring harness.
8	Repeat step 4 through step 7 for each defective fan.
9	Turn CU A and CU B ON to verify that the new fan is operating properly.
10	Close the equipment bay frames and the electronics compartment doors.

—continued—

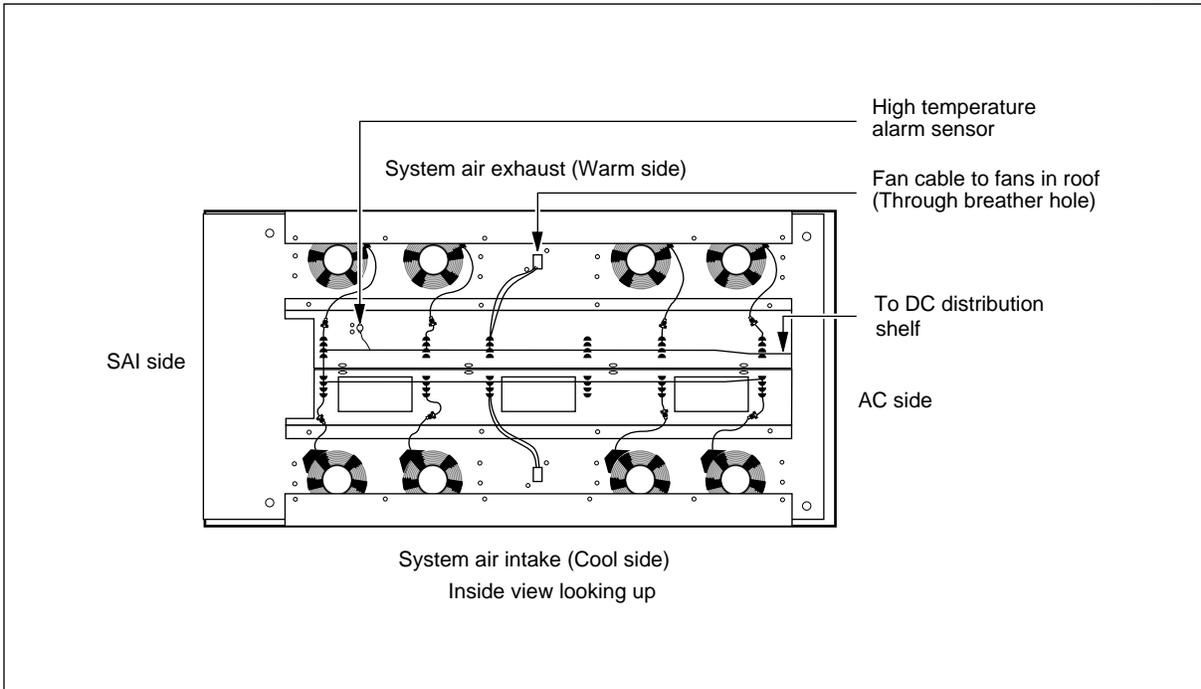
Procedure 12-12 (continued)

Replacing an internal fan unit in the heat exchanger roof

Figure 12-10

Replacing an internal fan in the heat exchanger roof

FW-11324



—end—

Procedure 12-13

Replacing an external fan unit in the heat exchanger roof

This procedure explains how to replace an externally mounted fan unit in the Series 800A cabinet with the NT7A69DA-FA heat exchanger roof options.

Note: Fan replacement *must* be completed within four hours of failure. Equipment or service outages may result due to excessive heat build-up in the cabinet.



CAUTION

Fire hazard

Remove all paper and any other combustible materials from inside the cabinet before the cabinet is powered up. Failure to comply with this warning could result in a fire.

Tools required

- can wrench (216 tool) with Harris insert part number 10660-001 (tool and insert shipped inside the cabinet)
- stubby Phillips head screwdriver
- 5-foot step ladder

Action

Step	Action
1	Remove the roof cover by loosening the 10 1/4-turn fasteners and removing the four lifting eye bolts and set it aside a safe distance.
2	Open the electronics compartment doors and swing frames and locate the defective fan (see Figure 12-11 on page 12-45).
3	Turn OFF circuit breakers CU A and CU B on the BIP.
4	Replace the defective fan by removing the two screws and fan grill.
5	Disconnect the fan connector from the fan wiring harness (see Figure 12-11 on page 12-45). Note: Do not discard or misplace the two screws and fan grill.
6	Install the new fan using the screws and fan grill removed in step 4.
7	Plug the fan connector back into the fan wiring harness.
8	Repeat step 4 through step 7 for each defective fan.
9	Turn CU A and CU B ON to verify that the new fan is operating properly.
10	Close the equipment bay frames and the electronics compartment doors.

—continued—

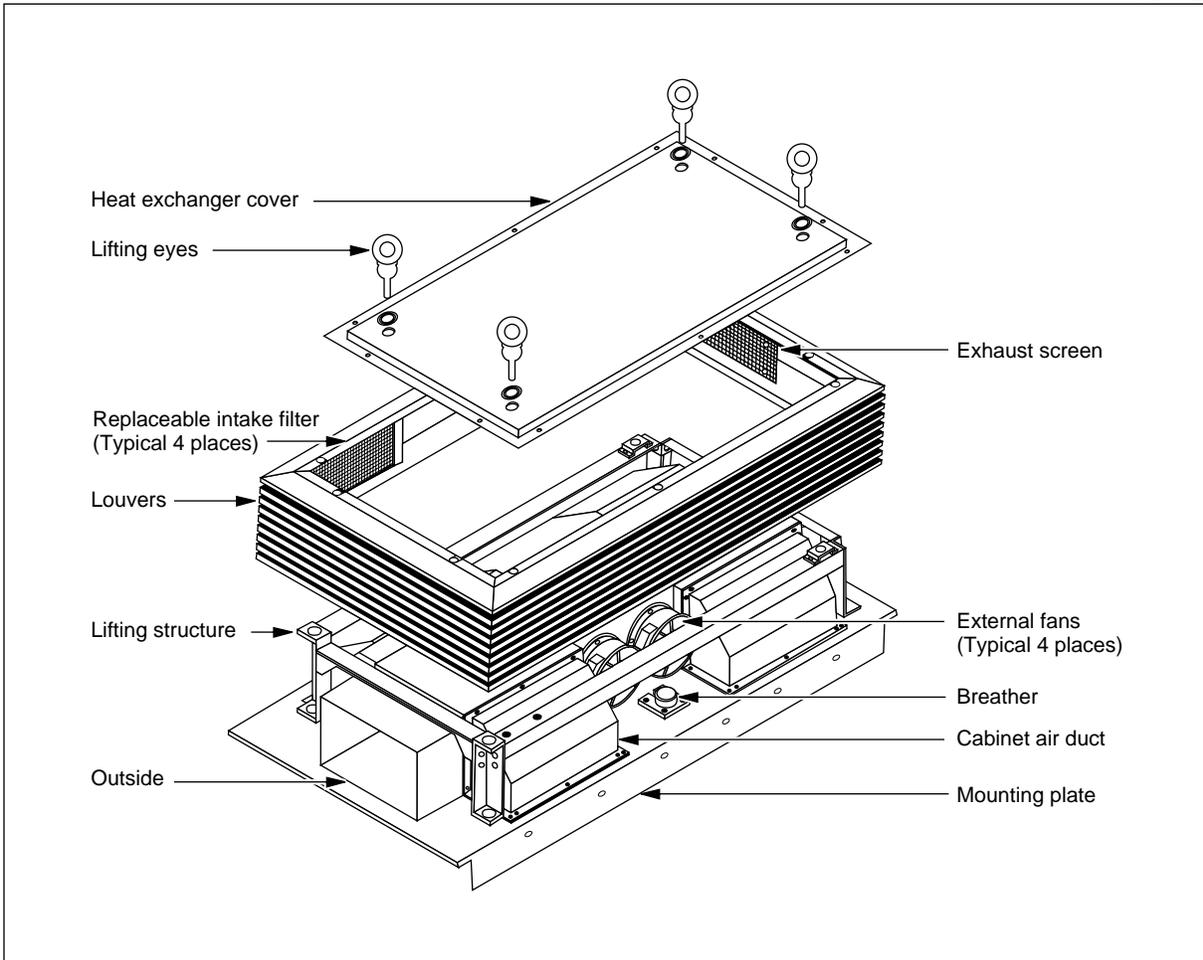
Procedure 12-13 (continued)

Replacing an external fan unit in the heat exchanger roof

Figure 12-11

Replacing an external fan in the heat exchanger roof

FW-11325



—end—

Procedure 12-14

Replacing a fan unit in the air induction roof

This procedure explains how to replace a fan unit in the Series 800A cabinet with the NT7A69AA-CA air induction roof options.

Note: Fan replacement *must* be completed within four hours of failure. Equipment or service outages may result due to excessive heat build-up in the cabinet.



CAUTION

Fire hazard

Remove all paper and any other combustible materials from inside the cabinet before the cabinet is powered up.

Failure to comply with this warning could result in a fire.

Tools required

A screwdriver, flat head medium, is required.

Material required

A NT7A99EA fan replacement kit is required.

Action

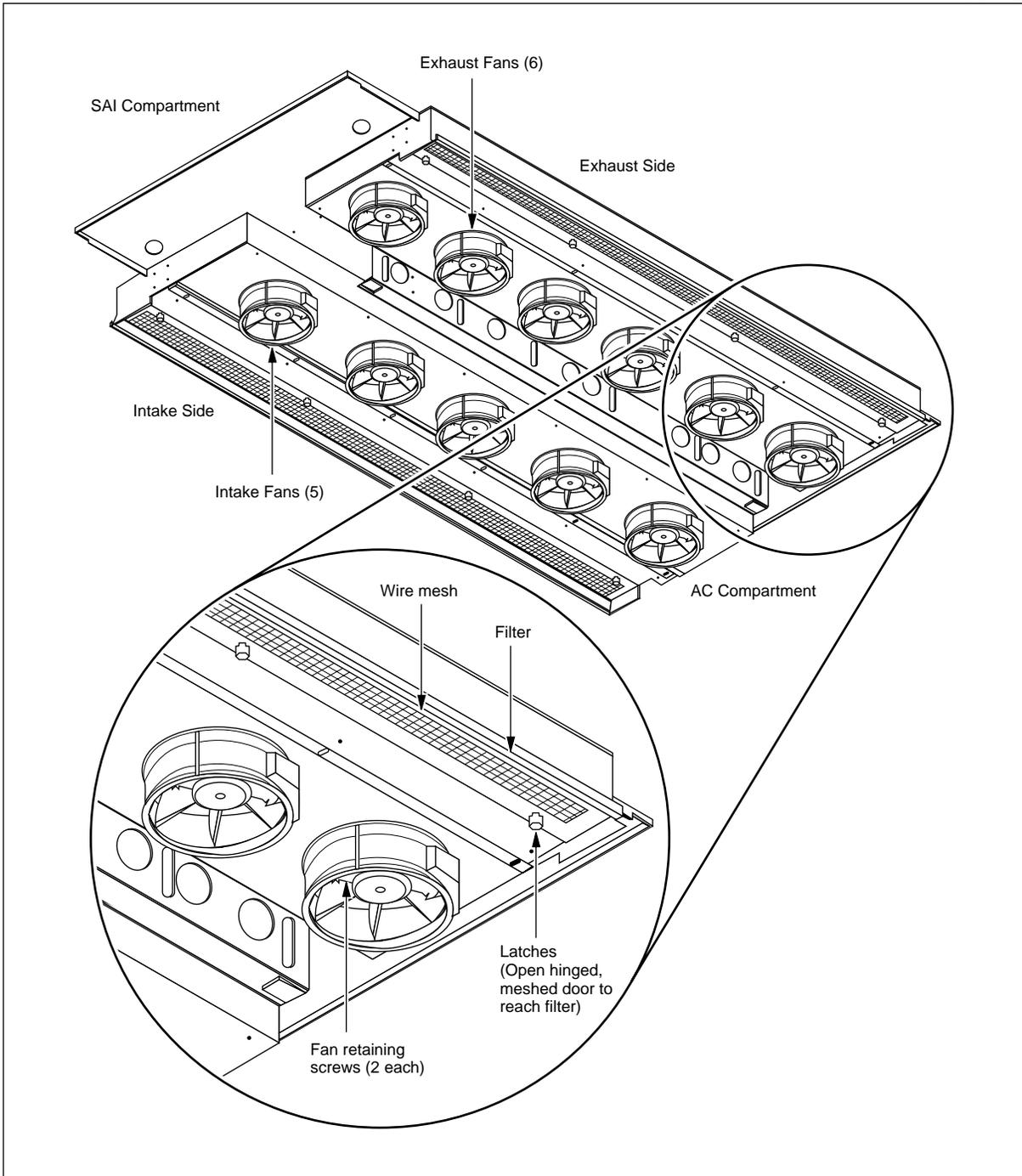
Step	Action
1	Open the electronics compartment doors (on the front side).
2	Turn OFF circuit breakers CU A and CU B on the BIP.
3	Open the equipment bay frames and locate the defective fan (see Figure 12-12 on page 12-47).
4	Remove the fan grill and two screws.
5	Disconnect the fan connector from the fan wiring harness. <i>Note:</i> Do not discard or misplace the two screws and fan grill (see Figure 12-12 on page 12-47).
6	Install the new fan using the screws and fan grill removed in step 4.
7	Plug fan connector back into fan wiring harness.
8	Repeat step 3 through step 7 for each defective fan.
9	Turn CU A and CU B ON to verify that the new fan is operating properly.
10	Close the electronics compartment doors.

—continued—

Procedure 12-14 (continued)
Replacing a fan unit in the air induction roof

Figure 12-12
Interior view of the fans in an air induction roof (looking up from inside cabinet)

FW-11327



—end—

Procedure 12-15

Replacing the equipment fan shelves

This procedure explains how to replace an equipment fan shelf in the Series 800A cabinet. There can be up to two equipment fan shelves installed in the S800A cabinet. These two fan shelves are called the standard and optional fan shelves, and they can be replaced independently of each other.



CAUTION

Potential loss of service and equipment damage

Fan replacement *must* be completed within four hours of failure. Equipment or service outages may result due to excessive heat build-up in the cabinet.



CAUTION

Fire hazard

Remove all paper and any other combustible materials from inside the cabinet before the cabinet is powered up.

Failure to comply with this warning could result in a fire.

Tools required

A screwdriver, flat head medium, is required.

Material required

An equipment fan shelf is required.

Equipment fan shelf locations

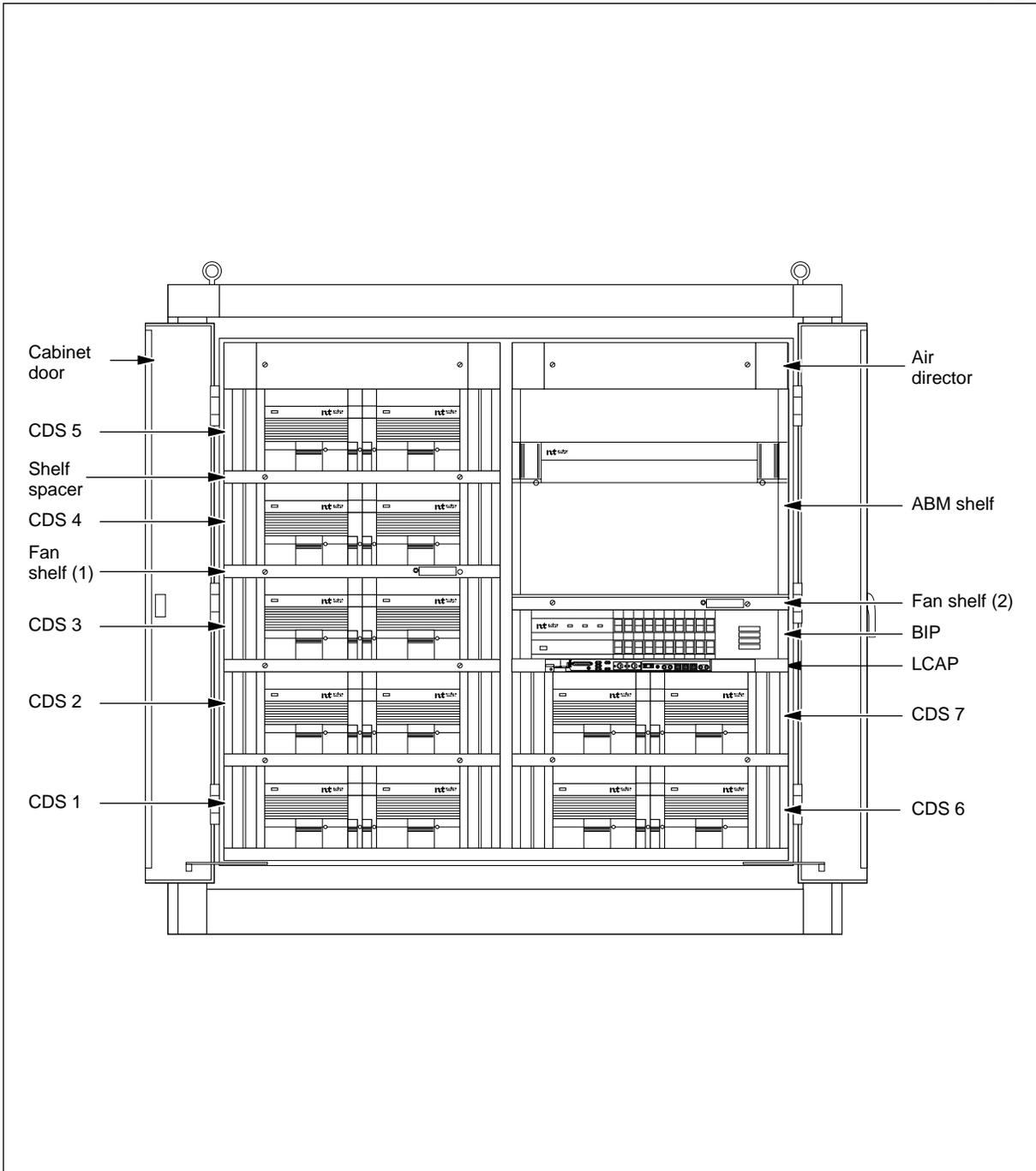
The standard fan shelf, factory-installed in all S800A cabinets, is mounted in the right-side swing frame below the ABM shelf in Fan shelf 2 location (see Figure 12-13 on page 12-49). The optional fan shelf, installed in applications having more than three CDS shelves, is mounted in the left-side swing frame between CDS 3 and CDS 4 in Fan shelf 1 location (see Figure 12-13 on page 12-49).

—continued—

Procedure 12-15 (continued)
Replacing the equipment fan shelves

Figure 12-13
Equipment fan shelf locations

FW-15239



—continued—

Equipment fan shelf types

The type of equipment fan shelf or shelves used in the S800A cabinet depends upon whether the cabinet is a standard (NT1W00DA/EA/FA) or VTBM-ready (NT1W00GA/HA/JA) cabinet. Standard S800A cabinets use the same NT1W09AA fan shelf in both the standard (Fan shelf 2) and optional (Fan shelf 1) locations. VTBM-ready S800A cabinets use an NT4K0610 fan shelf in the standard (Fan shelf 2) location and an NT1W09CA shelf in the optional (Fan shelf 1) location.

Table 12-13 presents the standard and optional equipment fan shelf types used in the standard and VTBM-ready S800A cabinets.

Table 12-13
S800A cabinet equipment fan shelves

S800A cabinet type (cabinet PEC code)	Standard fan shelf (Fan shelf 2)	Optional fan shelf (Fan shelf 1)
Standard S800A cabinet (NT1W00DA/EA/FA)	NT1W09AA	NT1W09AA
VTBM-ready S800A cabinet (NT1W00GA/HA/JA)	NT4K0610	NT1W09CA

Each of the equipment fan shelf types presented in Table 12-13 are illustrated in the following figures:

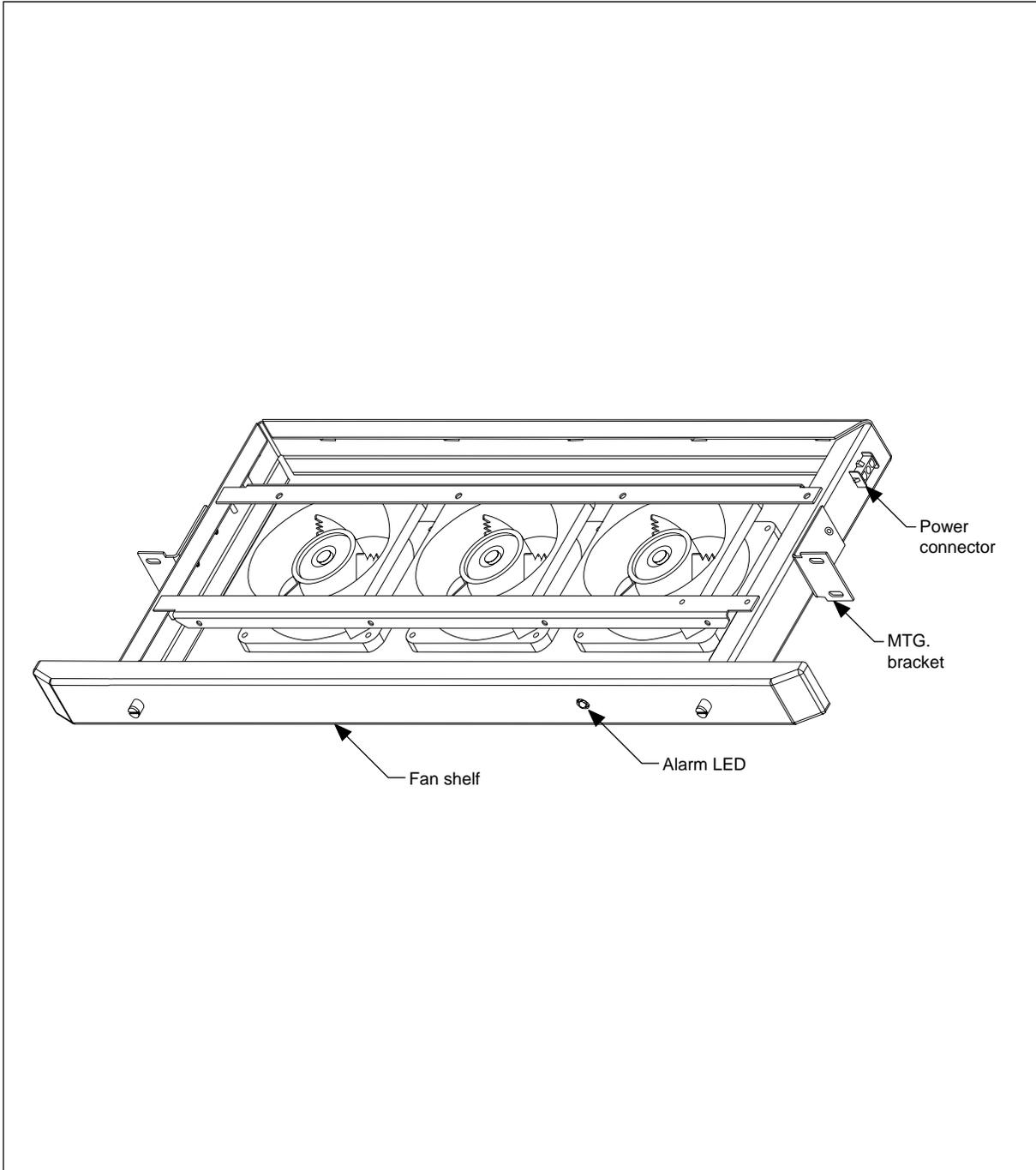
Equipment fan shelf	Illustration
NT1W09AA	Figure 12-14 on page 12-51
NT4K0610	Figure 12-15 on page 12-52
NT1W09CA	Figure 12-16 on page 12-53

—continued—

Procedure 12-15 (continued)
Replacing the equipment fan shelves

Figure 12-14
NT1W09AA equipment fan shelf

FW-15246

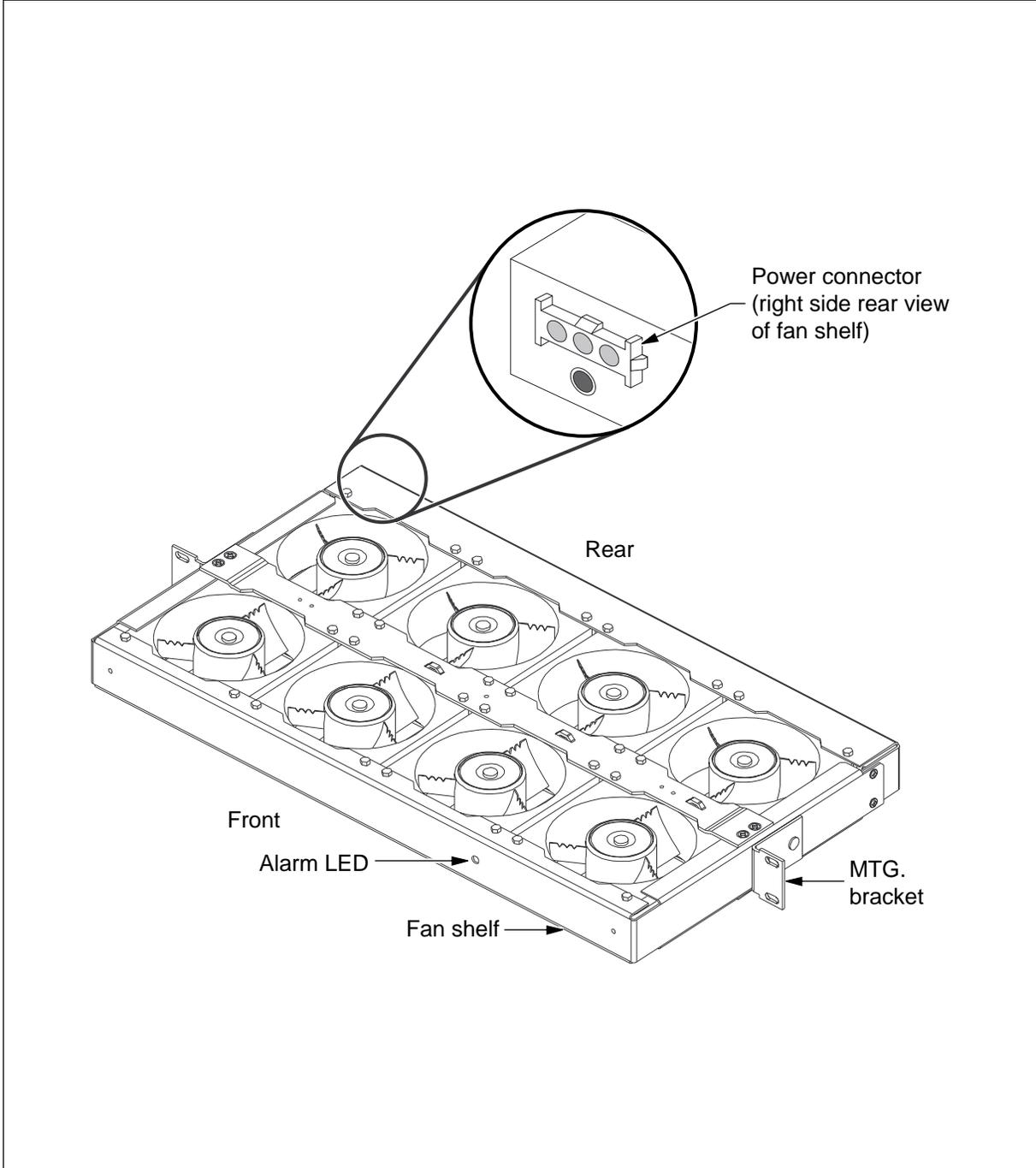


—continued—

Procedure 12-15 (continued)
Replacing the equipment fan shelves

Figure 12-15
NT4K0610 equipment fan shelf

FW-15775

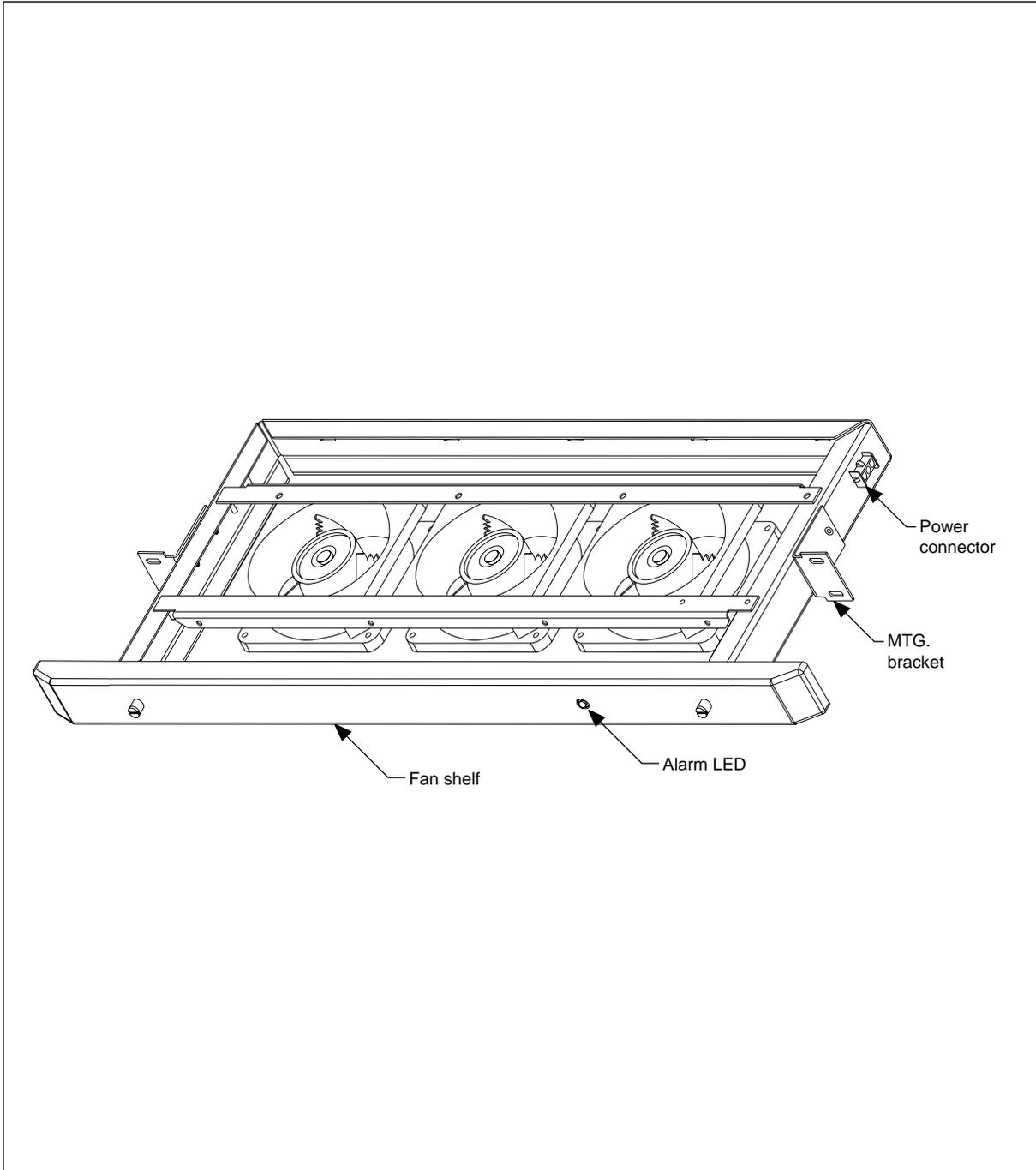


—continued—

Procedure 12-15 (continued)
Replacing the equipment fan shelves

Figure 12-16
NT1W09CA equipment fan shelf

FW-15246



—continued—

12-54 Cabinet maintenance operations

Procedure 12-15 (continued)

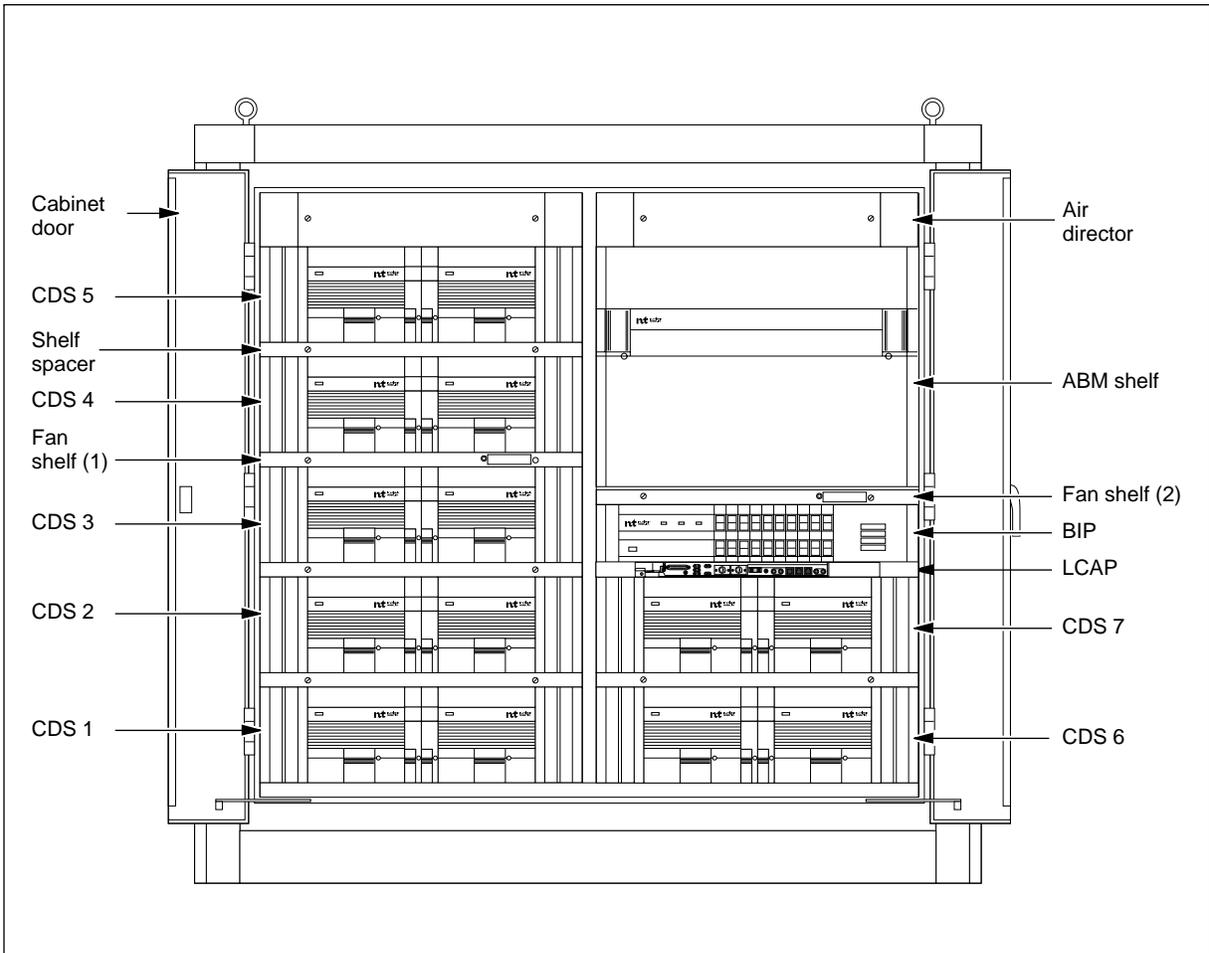
Replacing the equipment fan shelves

Action

Step	Action
1	Open the electronics compartment doors on the front side of the cabinet.
2	Locate the defective fan shelf having the illuminated LED on its front panel (see Figure 12-17).

Figure 12-17
Equipment fan shelf locations

FW-15239



—continued—

 Procedure 12-15 (continued)

Replacing the equipment fan shelves

Step Action

- 3** Turn OFF either circuit breaker CU A or CU B on the breaker interface panel (BIP) depending on the fan shelf having the illuminated LED to be replaced (see Table 12-14).

Table 12-14
Fan shelf circuit breakers on the BIP

If the illuminated LED is on	Then turn OFF circuit breaker
Fan shelf 2 (right-side swing frame)	CU B
Fan shelf 1 (left-side swing frame)	CU A

- 4** Turn the thumbscrews on the front panel of the failed fan shelf and remove the fan cover panel.

- 5** Disconnect the fan power connector from the fan shelf.

Note: For the location of the equipment fan shelf power connector, see one of the figures listed in the table below:

Equipment fan shelf	Illustration
NT1W09AA	Figure 12-14 on page 12-51
NT4K0610	Figure 12-15 on page 12-52
NT1W09CA	Figure 12-16 on page 12-53

—continued—

Procedure 12-15 (continued)

Replacing the equipment fan shelves

- | Step | Action |
|------|--|
| 6 | Remove and save the shelf mounting screws at each end of the shelf that secure the shelf to the swing frame. |
| 7 | Remove the fan shelf from the swing frame. |
| 8 | Place the new fan shelf in the vacated position. |
| 9 | Install the shelf mounting screws to secure the new shelf to the swing frame. |
| 10 | Connect the fan power connector to the fan shelf.
Note: For the location of the equipment fan shelf power connector, see one of the figures listed in the table below: |

Equipment fan shelf	Illustration
NT1W09AA	Figure 12-14 on page 12-51
NT4K0610	Figure 12-15 on page 12-52
NT1W09CA	Figure 12-16 on page 12-53

- 11 Install the fan shelf cover panel.
- 12 Turn the CU A or CU B BIP circuit breaker (see step 3) to the ON position.
- 13 Verify that the RED alarm LED is extinguished.
- 14 Close the swing frames and the cabinet doors.

—end—

Procedure 12-16

Installing a new optional equipment fan shelf

This procedure explains how to install a new optional equipment fan shelf in the S800A cabinet. Use this procedure to install the second fan shelf when increasing the S800A cabinet capacity to support more than three CDS shelves.

Note 1: This procedure is not meant to support the upgrading of a standard S800A cabinet for VTBM application. For the VTBM upgrade procedure, contact your Nortel Networks service representative.

Note 2: Nortel Networks recommends that you install the required fan shelf before you add the fourth CDS shelf (CDS 4).

**CAUTION****Fire hazard**

Remove all paper and any other combustible materials from inside the cabinet before the cabinet is powered up.

Failure to comply with this warning could result in a fire.

Tools required

A screwdriver, flat head medium, is required.

Material required

An equipment fan shelf is required.

Equipment fan shelf location

The optional fan shelf, required in applications having more than three CDS shelves, mounts in the Fan shelf 1 position on the left-side swing frame between CDS 3 and CDS 4 (see Figure 12-18 on page 12-58).

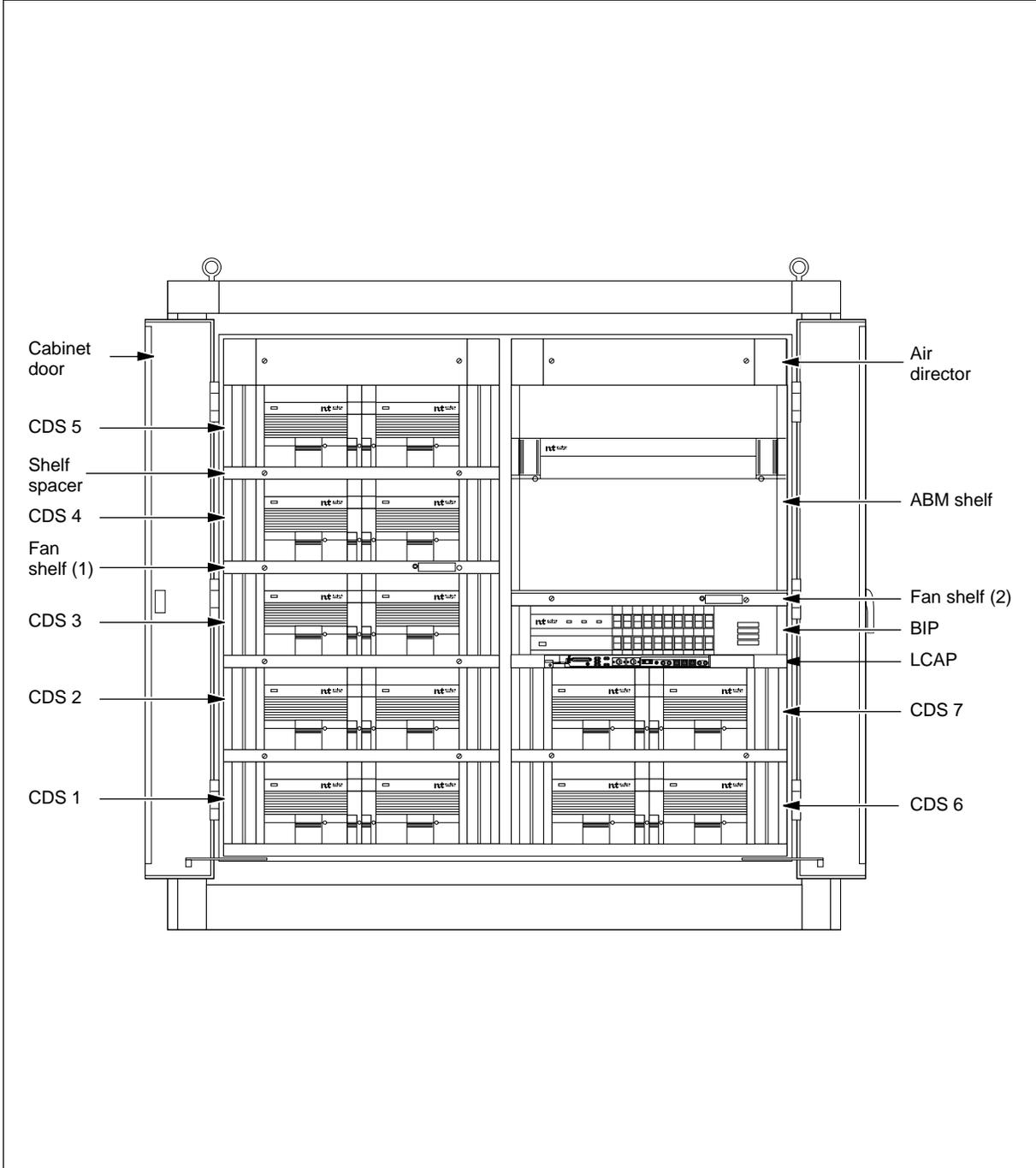
—continued—

12-58 Cabinet maintenance operations

Procedure 12-16 (continued)
Replacing the equipment fan shelves

Figure 12-18
Equipment fan shelf locations

FW-15239



—continued—

 Procedure 12-16 (continued)

Installing a new optional equipment fan shelf

Table 12-15 presents the optional equipment fan shelf types used in the standard and VTBM-ready S800A cabinets.

Table 12-15
S800A cabinet equipment fan shelves

S800A cabinet type (cabinet PEC code)	Optional fan shelf (Fan shelf 1)
Standard S800A cabinet (NT1W00DA/EA/FA)	NT1W09AA
VTBM-ready S800A cabinet (NT1W00GA/HA/JA)	NT1W09CA

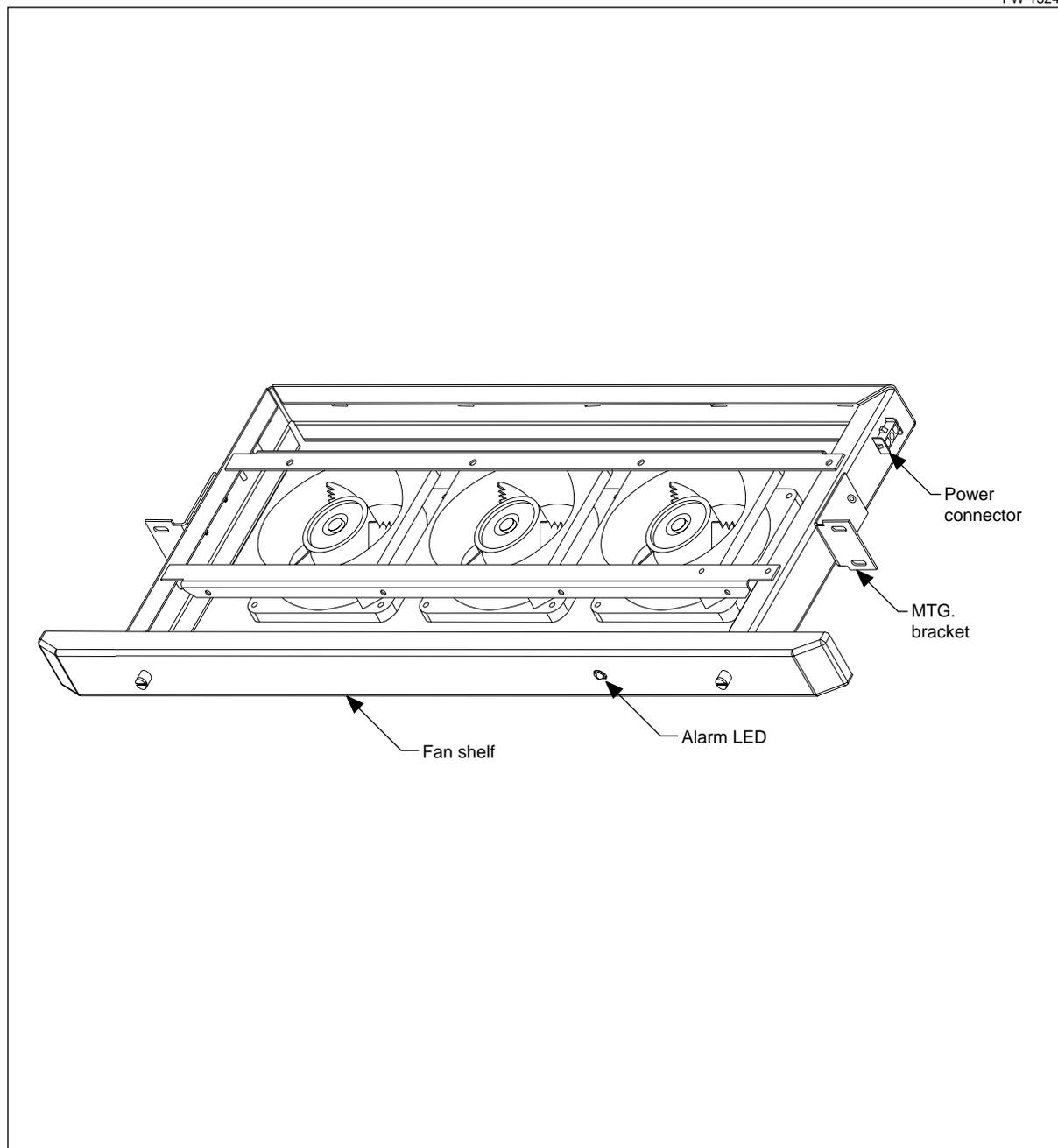
Both equipment fan shelf types presented in Table 12-13 are illustrated in Figure 12-19 on page 12-60.

—continued—

Procedure 12-16 (continued)
Installing a new optional equipment fan shelf

Figure 12-19
NT1W09AA/CA equipment fan shelf

FW-15246



—continued—

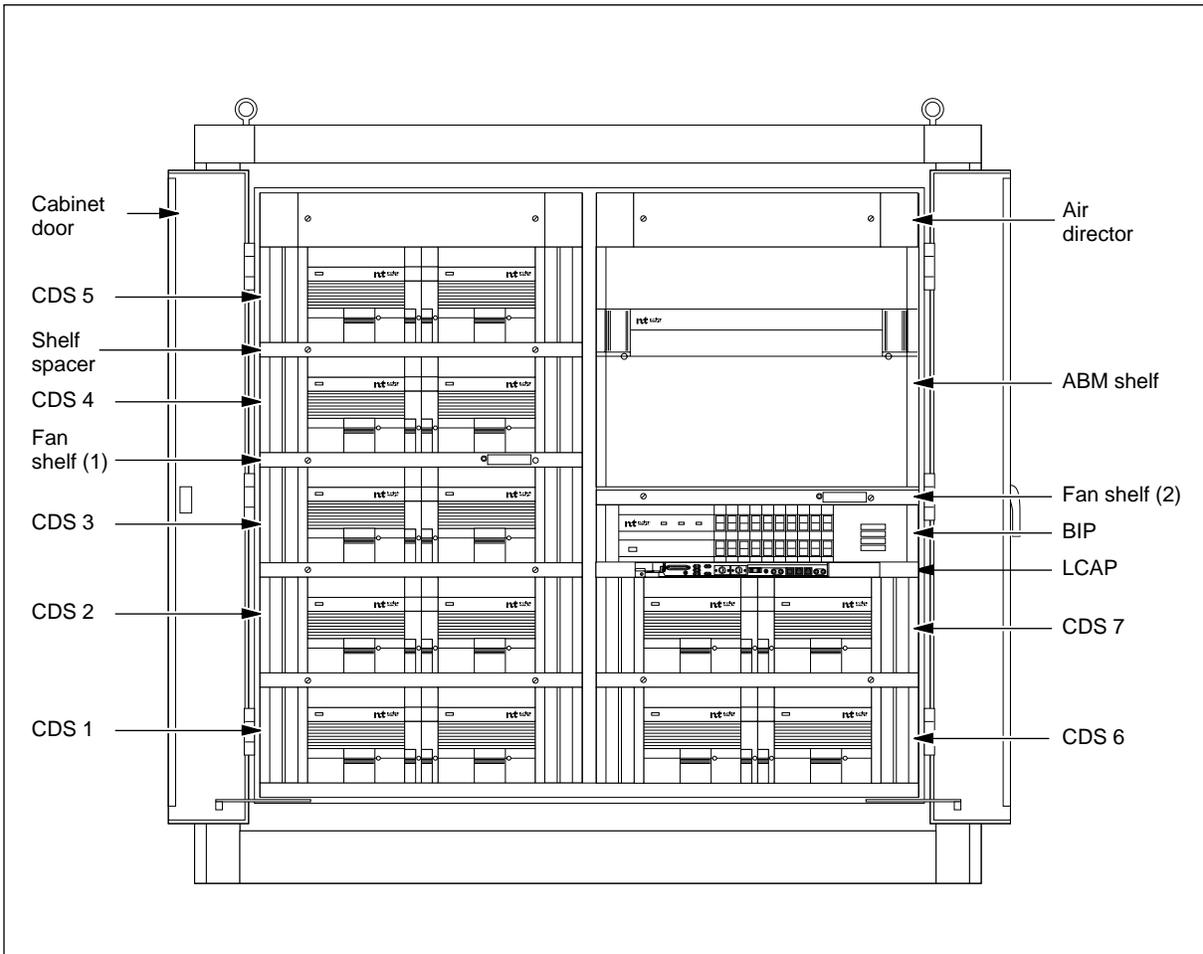
Procedure 12-16 (continued)
Installing a new optional equipment fan shelf

Action

Step	Action
1	Open the electronics compartment doors on the front side of the cabinet.
2	Locate the position of the fan shelf to be installed (see Figure 12-20).

Figure 12-20
Equipment fan shelf locations

FW-15239



—continued—

12-62 Cabinet maintenance operations

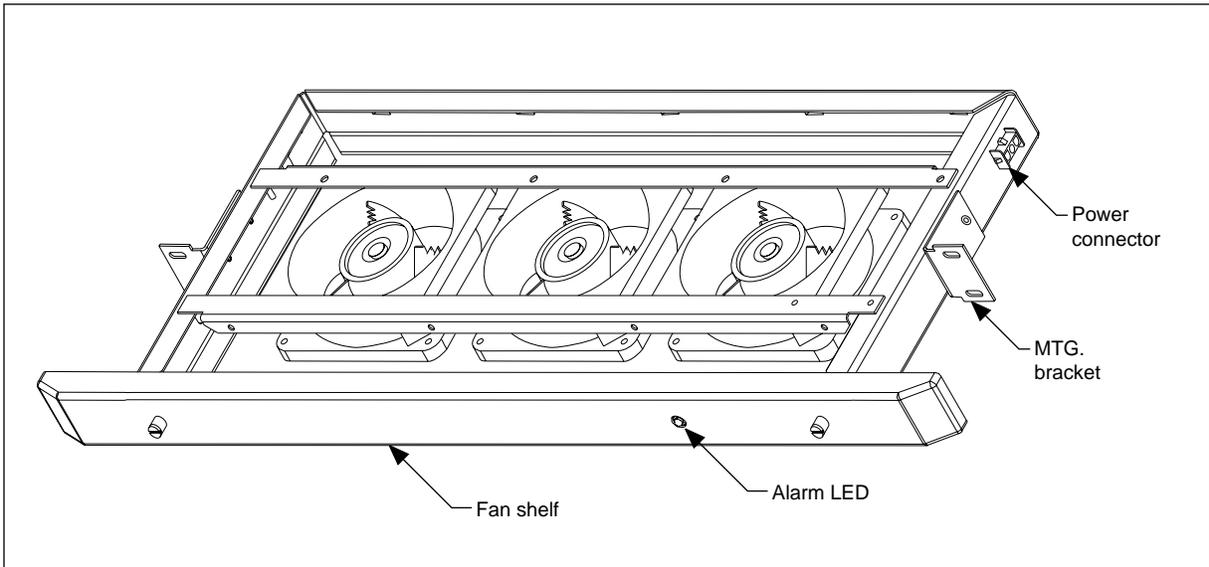
Procedure 12-16 (continued)

Installing a new optional equipment fan shelf

Step	Action
3	Turn OFF circuit breaker CU A.
4	Remove the fan cover panel of the fan shelf to be installed.
5	Place the new fan shelf in the proper position in the swing frame so that the mounting brackets are flush up against the swing frame.
6	Install the shelf mounting screws to secure the new shelf to the swing frame.
7	Reinstall the fan cover panel of the fan shelf.
8	Connect the fan power connector to the rear of the right side of the shelf (see Figure 12-21).
9	Turn ON circuit breaker CU A.

Figure 12-21
NT1W09AA/CA fan shelf power connector location

FW-15246



—end—

Procedure 12-17

Replacing the fan filters in the heat exchanger roof

This procedure explains how to replace the intake and exhaust fan filters in the Series 800A cabinet with the NT7A69 heat exchanger roof options.

Tools required

A can wrench (216 tool) with Harris insert part number 10660-001 (tool and insert shipped inside the cabinet), is required.

Materials required

A NT7A6920 fan filter replacement kit is required.

Action

Step	Action
1	Remove the filter retaining bracket on the underside of the rain louvers by loosening the 2 1/4 turn fasteners (see Figure 12-22 on page 12-64).
2	Place the filter retaining bracket in a safe place.
3	Remove the filter by pulling down on the two filter removing straps.
4	Inspect the filter. If possible tap the filter on the ground or rinse with water to remove any dirt or insects.
5	If filter cannot be reasonably cleaned, then replace with new filter. Note: Make sure the new filter removing straps are oriented properly at the bottom of the filter before installing.
6	Replace the filter retaining bracket.
7	Repeat step 1 through step 6 for each of the remaining 3 filters.

—continued—

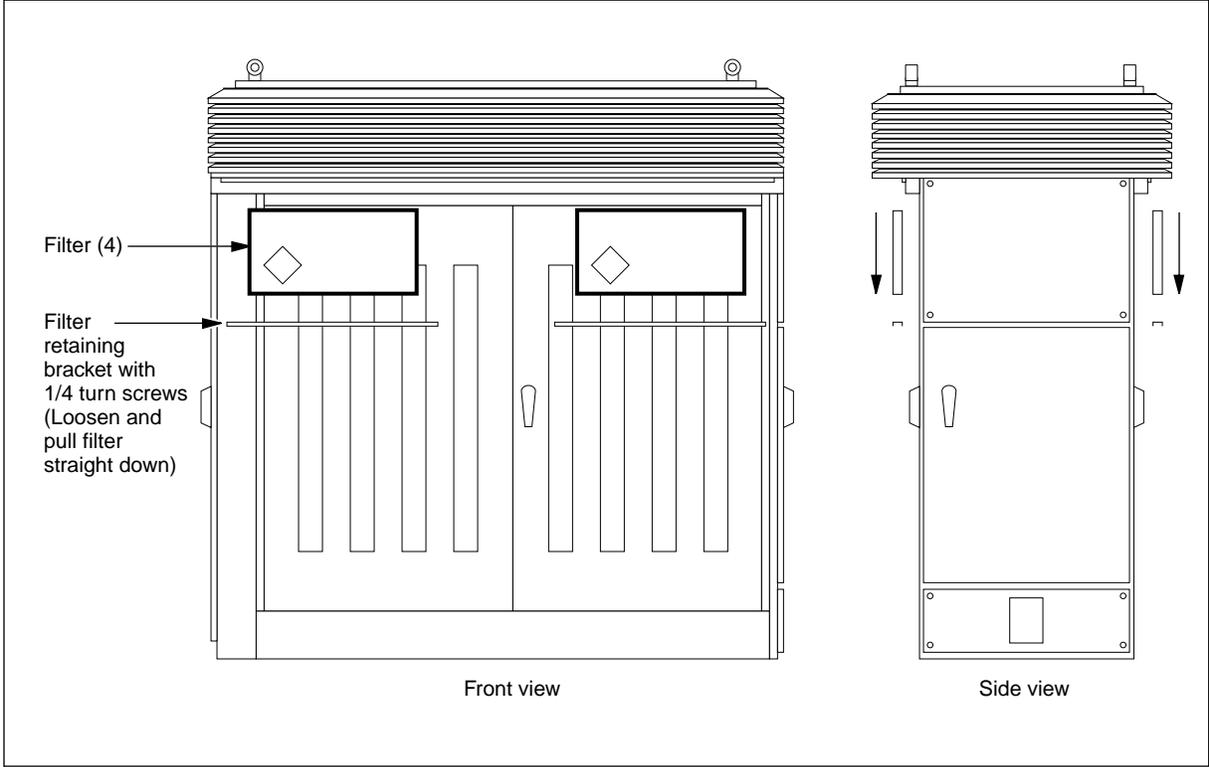
Procedure 12-17 (continued)

Replacing the fan filters in the heat exchanger roof

Figure 12-22

Replacing the fan filters in the heat exchanger roof

FW-15161



—end—

Procedure 12-18

Replacing the fan filters in the air induction roof

This procedure explains how to replace the intake and exhaust fan filters in the Series 800A cabinet with the NT7A69AA-CA air induction roof options.

Tools required

A screwdriver, flat head, medium, is required.

Materials required

A NT7A6930 fan filter replacement kit is required.

Action

Step	Action
1	Open all four equipment compartment doors (front and rear).
2	Switch circuit breakers CU A and CU B on the breaker interface panel (BIP) to the OFF position.
3	Use a screwdriver to loosen the eight thumb screws (four on each side) on the hinged filter cover on the exhaust fan side (six fans) and the intake fan side (five fans).
4	Allow the hinged fan cover to swing down (see Figure 12-23 on page 12-66).
5	Remove and discard the old exhaust and intake fan filters.



CAUTION

Air filtering requirements

Make sure both filters are seated against the grate for its entire length. Improper installation allows air, moisture, sand and other foreign material to bypass the filter.

- | | |
|---|--|
| 6 | Replace with new fan filters and tighten thumbscrews. |
| 7 | Switch CU A and CU B on the BIP to the ON position. |
| 8 | Make sure air is flowing into the cabinet through the rain louver intake and out of the cabinet through the rain louver exhaust. |
| 9 | Close the equipment compartment doors. |

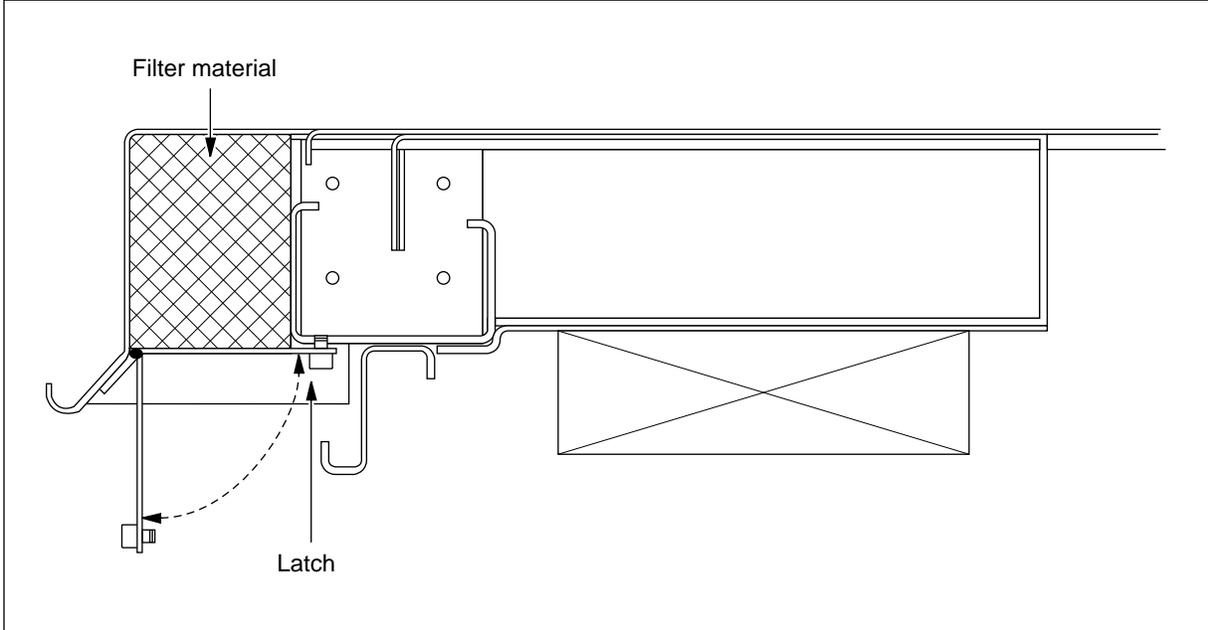
—continued—

12-66 Cabinet maintenance operations

Procedure 12-18 (continued)
Replacing the fan filters in the air induction roof

Figure 12-23
Cross section of the air induction roof with filters

FW-15162



—end—

Cabinet and equipment wiring and cabling

This chapter describes the wiring and cabling information needed to assist in the installation verification processes and troubleshooting procedures as defined by Nortel Networks and local customer practices.

Installation information in this chapter

Diagrams, schematics and tables are included in this chapter for the S800A cabinet and AccessNode equipment.

Table 13-1 on page 13-2 is provided for your quick reference to the contents of this chapter. Use this table to navigate to the specific wiring and cabling information that you need.

Note that the information contained in this chapter is standard for the S800A cabinet and that job or site specific wiring and cabling may differ slightly depending on the job or site requirements.

Table 13-13 on page 13-56 through Table 13-21 on page 13-79 give you the cabinet wiring and cabling information in tabular form. Reference these tables for detailed interconnect listings for point-to-point wiring.

13-2 Cabinet and equipment wiring and cabling

Use Table 13-1 to navigate through this chapter to find the wiring and cabling information for the cabinet and equipment.

Table 13-1
Cabinet and equipment wiring information

If you want to find general wiring information regarding	Or more detailed wiring information regarding	Then turn to
Grounding		page 13-4
	cabinet grounding	page 13-4
	equipment grounding	page 13-6
AC power distribution		page 13-7
	ac load box	page 13-8
	ac power pedestal	page 13-11
	ac input to the rectifier	page 13-15
DC power distribution		page 13-16
	rectifier dc output	page 13-17
	dc distribution shelf dc power	page 13-18
	dc distribution shelf circuit breaker designations	page 13-19
	battery breaker panel dc power connections	page 13-22
	battery breaker panel circuit breaker designations	page 13-23
	breaker interface panel wiring	page 13-26
	battery interface panel circuit breaker designations	page 13-27
	fan power wiring	page 13-28
	battery interface feed	page 13-29
	alarm wiring	page 13-32
—continued—		

Table 13-1 (continued)
Cabinet and equipment wiring information

If you want to find general wiring information regarding	Or more detailed wiring information regarding	Then turn to
Access bandwidth manager shelf wiring and cabling		page 13-34
	SIL card connectors and wiring	page 13-34
	MTA cable	page 13-36
	LCAP	page 13-37
	orderwire extension	page 13-37
	fan and temperature alarm circuit	page 13-38
	MODEM wiring and cabling	page 13-39
	parallel telemetry	page 13-40
	BIP control cable	page 13-42
	SIR card connectors and wiring	page 13-44
	test bypass pair I/O	page 13-49
	test access pair I/O	page 13-49
	DS1 I/O cards	page 13-50
	DS1 I/O card wiring	page 13-51
DSX and repeater cabling		page 13-51
	DSX wiring tables	page 13-51
copper-distribution shelf cabling		page 13-62
	SPC VF cabling	page 13-62
SPC protector block wiring		page 13-67
Wiring tables		page 13-70
—end—		

Grounding

The wiring and cabling of the mechanical cabinet is detailed in this section.

Cabinet grounding

Figure 13-1 shows the cabinet grounding schematic for ground connections from the cabinet frame ground (FG) bus bar to the customer defined earth grounding position.

Figure 13-2 on page 13-5 details the internal ground connections within the cabinet.

Figure 13-1
External cabinet grounding

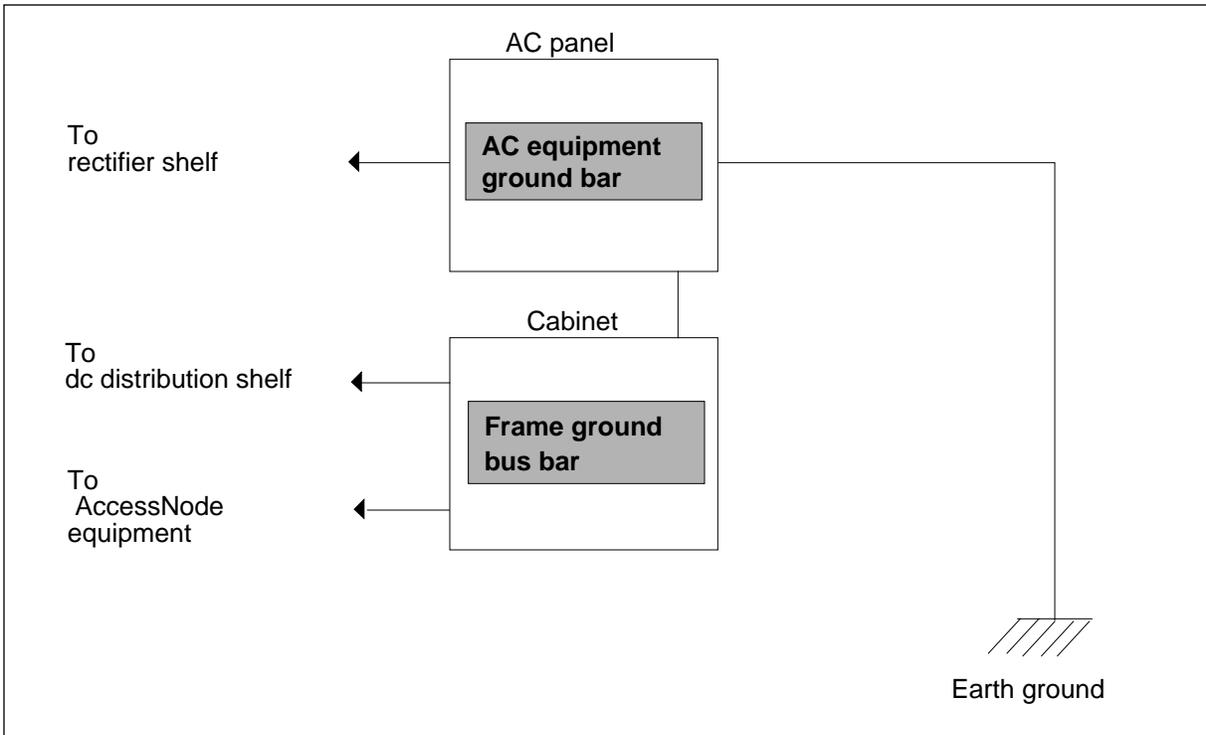
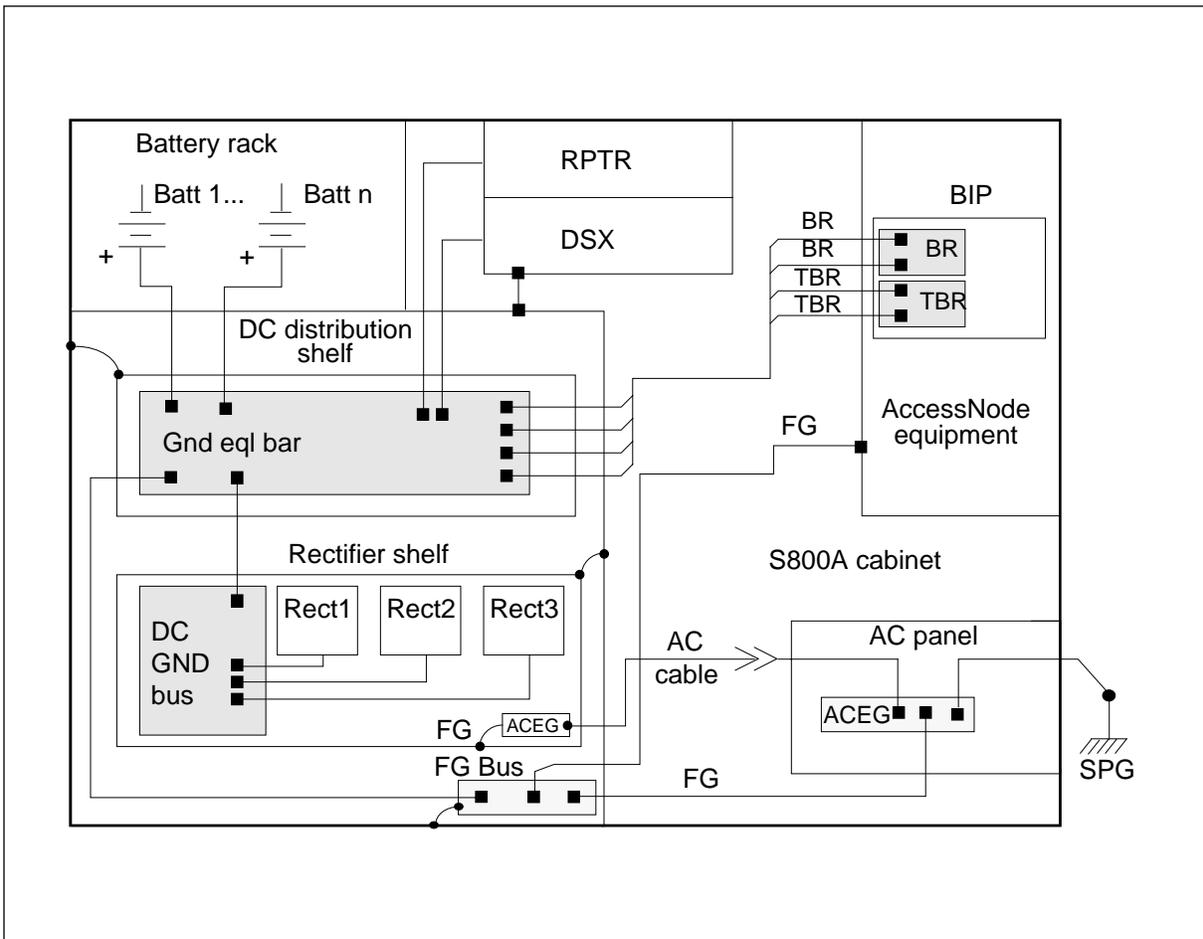


Figure 13-2
Internal cabinet grounding

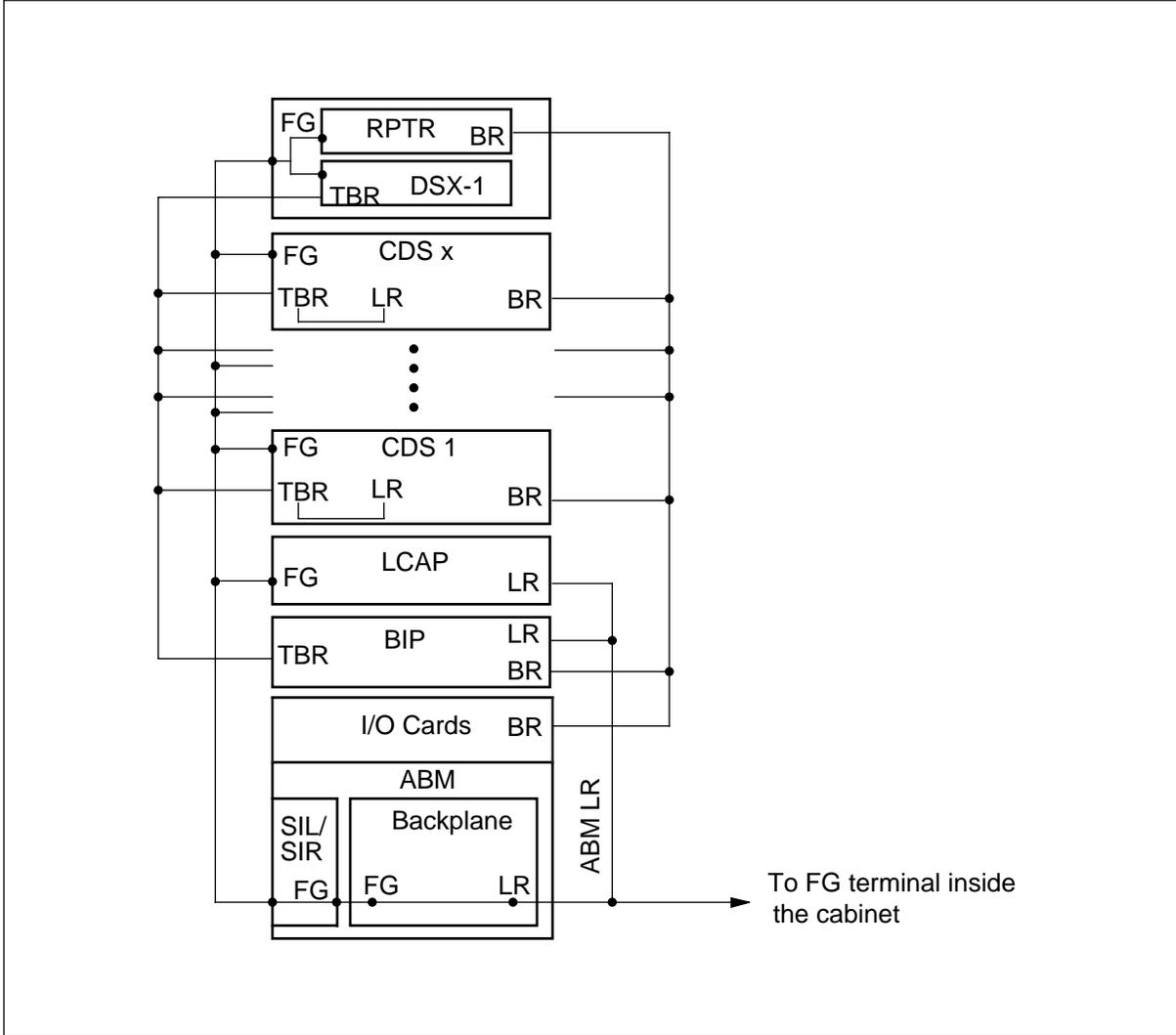


Equipment grounding

Figure 13-3 shows the AccessNode equipment ground connections to the frame ground (FG) bus bar in the cabinet.

Figure 13-3
AccessNode equipment ground connections

FW-15195



AC power distribution

AC power distribution within the S800A cabinet is provided through the NT7A71AA-CA load box or the NT7A68AA-CA/DA-FA power pedestal options. This section details the wiring diagrams and schematics for these ac power options.

For cabinets and mechanical options, the suffixes denote paint color.

Suffix	Color
AA/DA	Brown
BA/EA	Ivory
CA/FA	Green

Figure 13-4 on page 13-9 shows the cabinet ac power distribution diagram for cabinets equipped with the NT7A71AA-CA 100/100 amp load box options.

Figure 13-5 on page 13-10 shows the cabinet ac outlet box wiring diagram for the S800A which is common to all of the ac power distribution options.

Figure 13-6 on page 13-13 shows the wiring of the NT7A68AA-CA 60/100 amp ac power pedestal options.

Figure 13-7 on page 13-14 shows the wiring of the NT7A68DA-FA 100/100 amp ac power pedestal options.

AC load box

The ac load box wiring diagrams and schematics detail the wiring and cabling schematics for the NT7A71AA-CA 100/100 amp load box option.

The load box has the 100 amp main service entrance coupled with the 100 amp emergency service transfer from an externally located generator.

Table 13-2 shows the circuit breaker designations and the lead connections for the NT7A71AA-CA load box option (see Figure 13-4 on page 13-9).

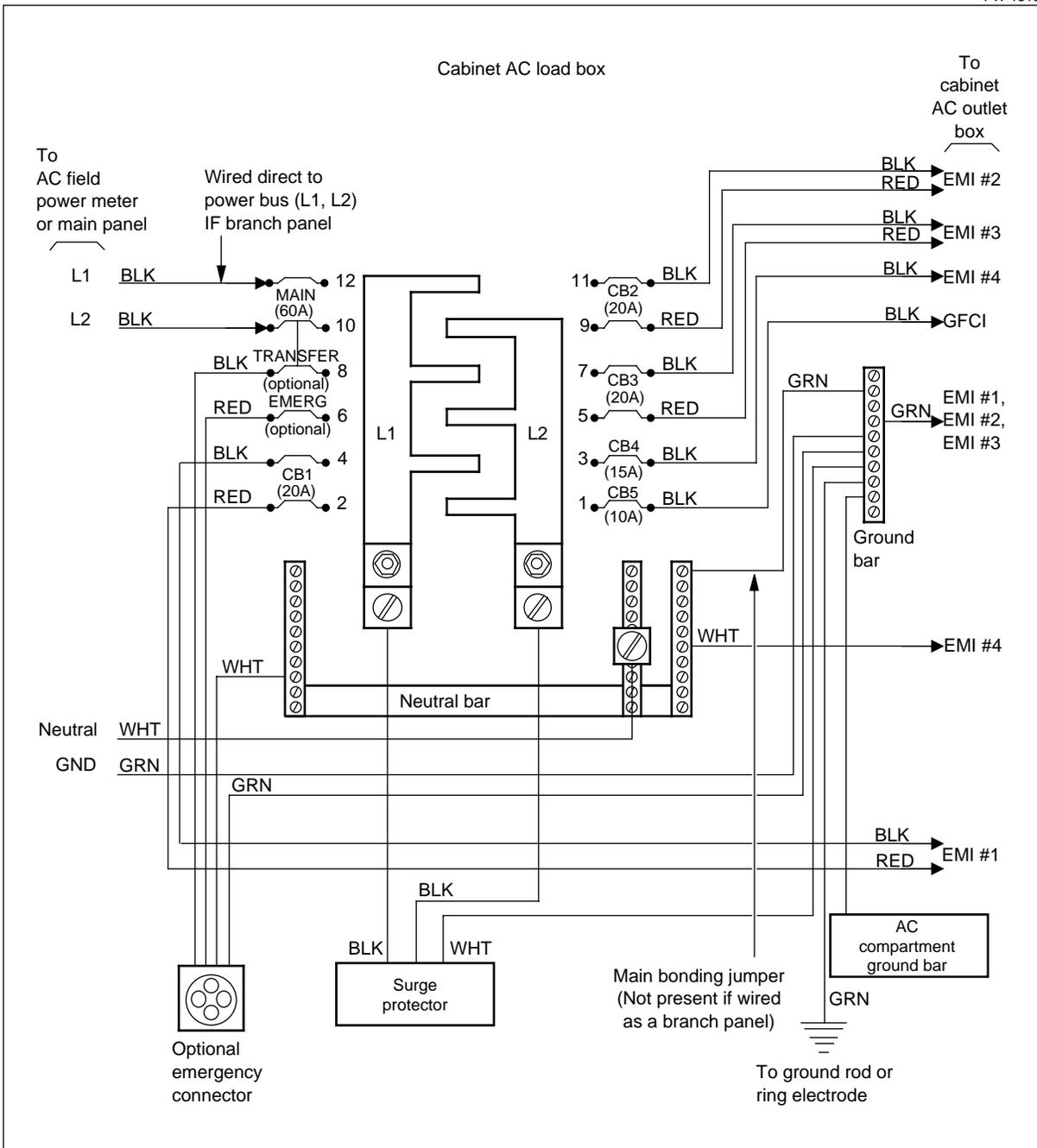
Table 13-2
AC load box circuit breaker designations and connections

L1	L2	Description	Designation	Color	Position
60		Main breaker	MAIN	BK	12
	60			BK	10
60		Emergency	EMERG	BK	8
	60			RED	6
20		Rectifier 1	CB #1	BK	4
	20			RED	2
20		Rectifier 2	CB #2	BK	11
	20			RED	9
20		Rectifier 3	CB #3	BK	7
	20			RED	5
15		Heater	CB #4	BK	3
	10	GFCI	CB #5	BK	1

Note: Refer to Figure 13-5 on page 13-10 for the cabinet ac outlet box wiring which is common to all of the ac distribution options.

Figure 13-4
Cabinet ac load box (NT7A71AA-CA option)

FW-15165



AC power pedestal

The ac load box wiring diagrams and schematics detail the wiring and cabling schematics for the NT7A68-- ac power pedestal options.

Table 13-2 on page 13-8 shows the circuit breaker designations and the lead connections for the NT7A68-- power pedestal options (see Figure 13-6 on page 13-13 and Figure 13-7 on page 13-14).

Note: Refer to Figure 13-2 on page 13-5 for the cabinet ac outlet box wiring which is common to all of the ac distribution options

The NT7A68AA-CA 60/100 amp power pedestal has the 100 amp main service entrance coupled with the 60A emergency service transfer switch for powering from an externally located generator.

The NT7A68DA-FA 100/100 amp power pedestal has the 100 amp main service entrance coupled with the 100 amp emergency service transfer switch for powering from an externally located generator.

Figure 13-6 on page 13-13 shows the wiring of the NT7A68AA-CA 60/100 amp ac power pedestal options.

Figure 13-7 on page 13-14 shows the wiring of the NT7A68DA-FA 100/100 amp ac power pedestal options.

Table 13-3 shows the circuit breaker designations and the lead connections for the NT7A68AA-CA and NT7A68DA-FA power pedestal options (see Figure 13-6 on page 13-13 and Figure 13-7 on page 13-14).

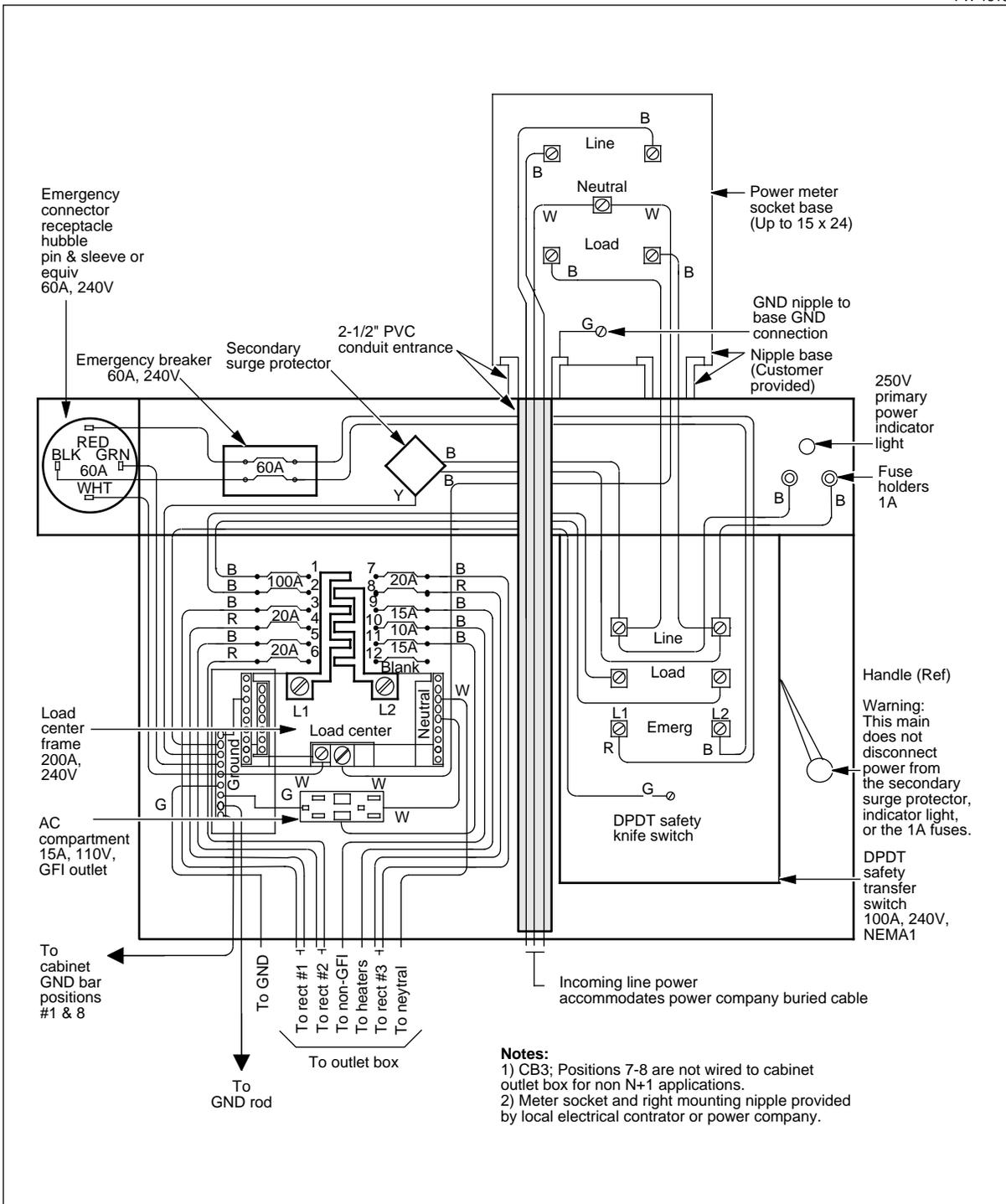
Table 13-3
NT7A68AA-CA power pedestal circuit breaker designations and connections

L1	L2	Description	Designation	Color	Position
100		Main breaker	MAIN	BK	1
	100			BK	2
20		Rectifier 1	CB #1	BK	3
	20			RED	4
20		Rectifier 2	CB #2	BK	5
	20			RED	6
20		Rectifier 3 (<i>Note</i>)	CB #3	BK	7
	20			RED	8
15		Heaters	CB #4	BK	9
	10	Internal GFCI	CB #5	BK	10
15		External GFCI	CB #6	BK	11
		Blank			12

Note: CB #3, positions 7-8 are not wired to the cabinet outlet box for non N+1 applications.

Figure 13-6
60/100 amp ac power pedestal (NT7A68AA-CA option)

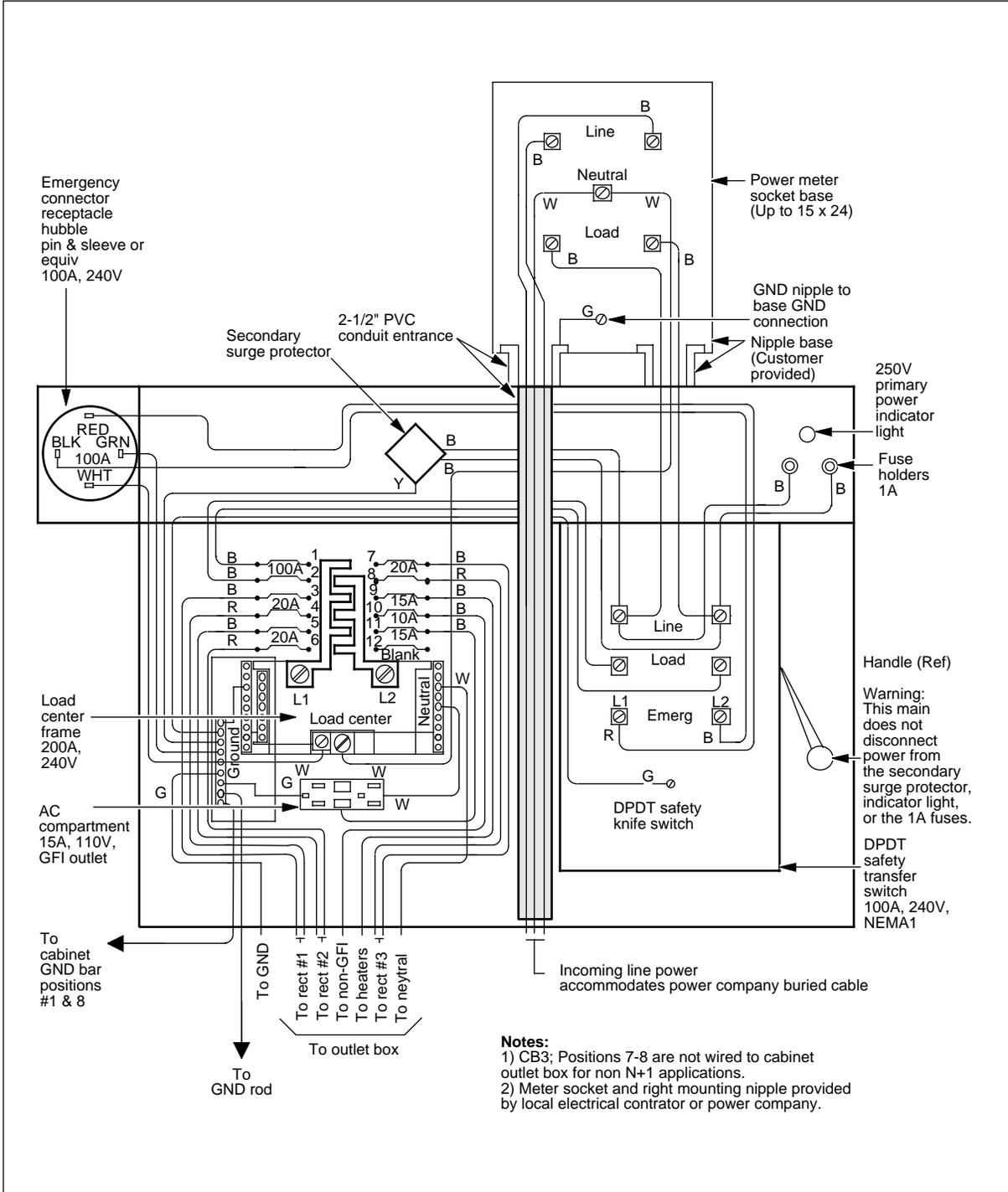
FW-15169



13-14 Cabinet and equipment wiring and cabling

Figure 13-7
100/100 amp ac power pedestal (NT7A68DA-FA option)

FW-15170

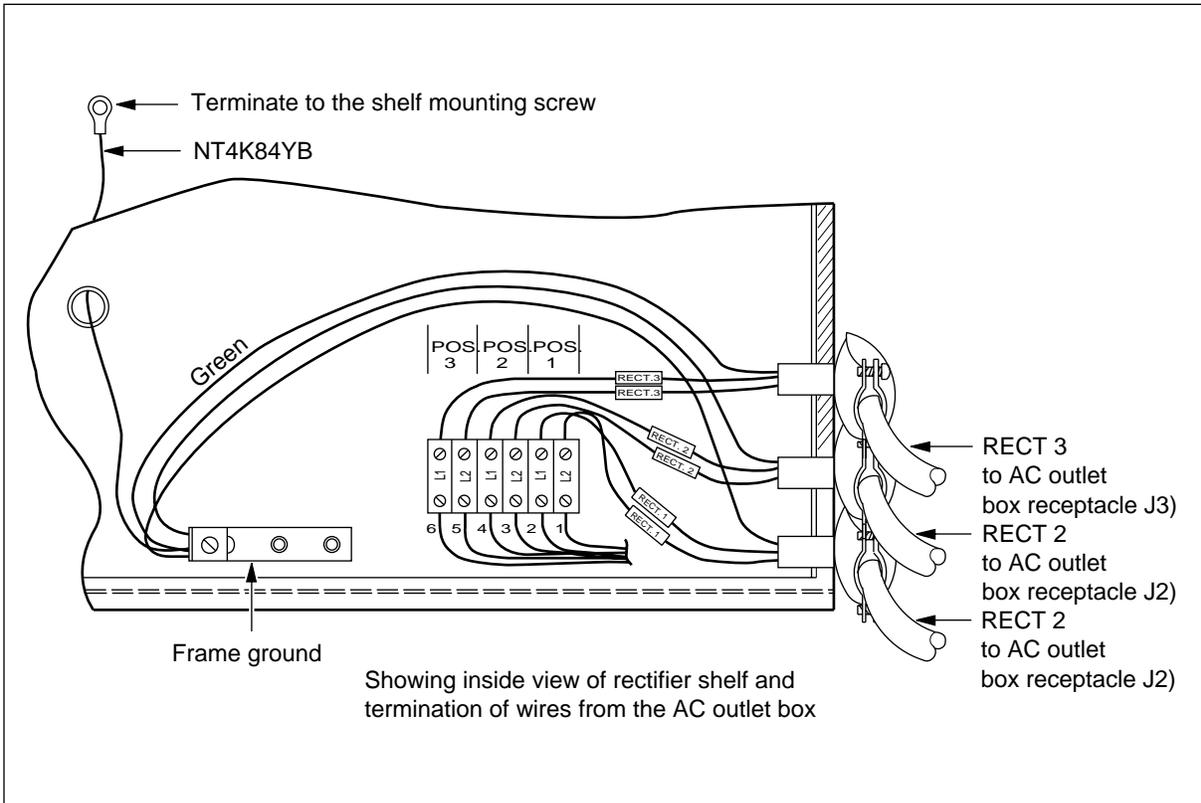


Rectifier ac input cabling

The ac input (see Figure 13-8 below) for the NT5C10CC rectifier shelf (240V ac, 60 Hz) is fed through the rectifier outlet boxes (see Figure 13-5 on page 13-10) from the ac load box or power pedestal options (see Figure 13-4 on page 13-9, Figure 13-6 on page 13-13 and Figure 13-7 on page 13-14).

Figure 13-8
Rectifier ac input cabling

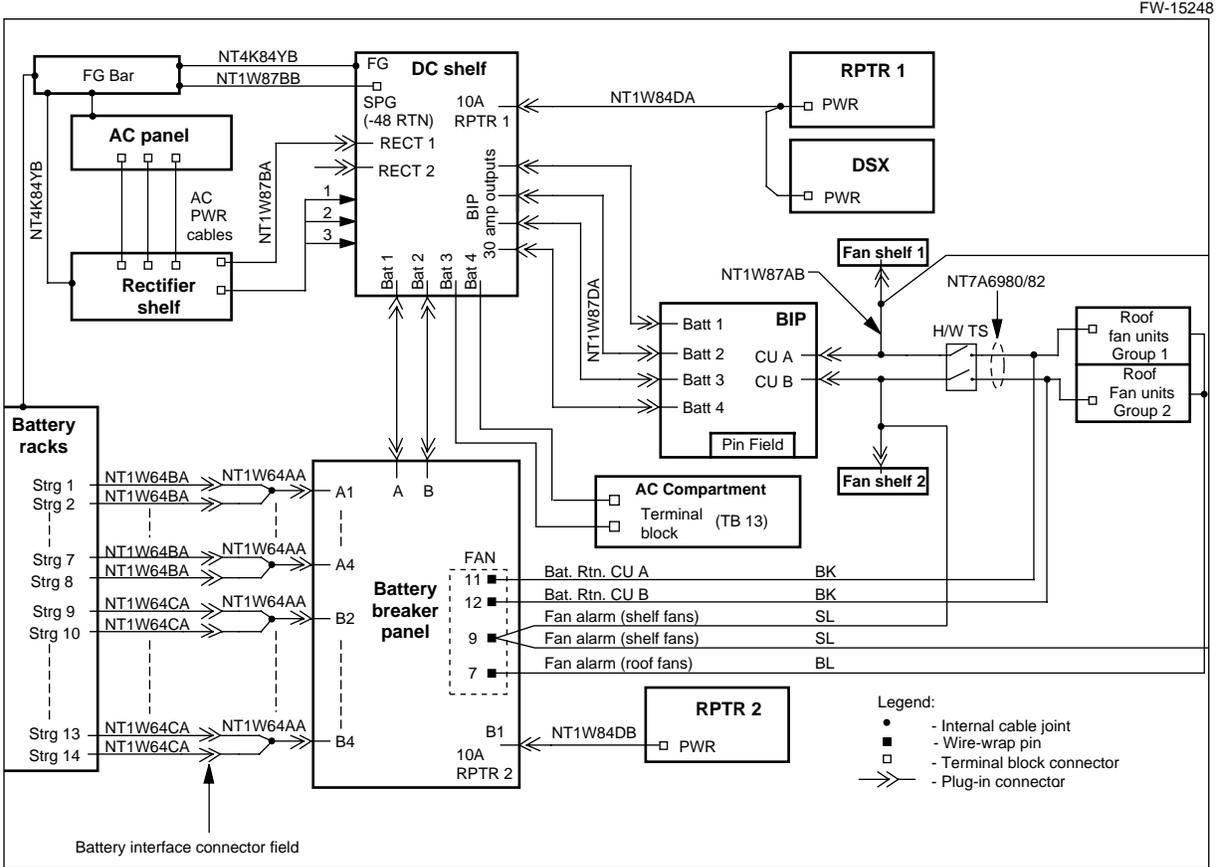
FW-15174



DC power distribution

This section details the dc power distribution throughout the S800A. Figure 13-9 shows the dc power distribution diagram.

Figure 13-9
DC power distribution diagram



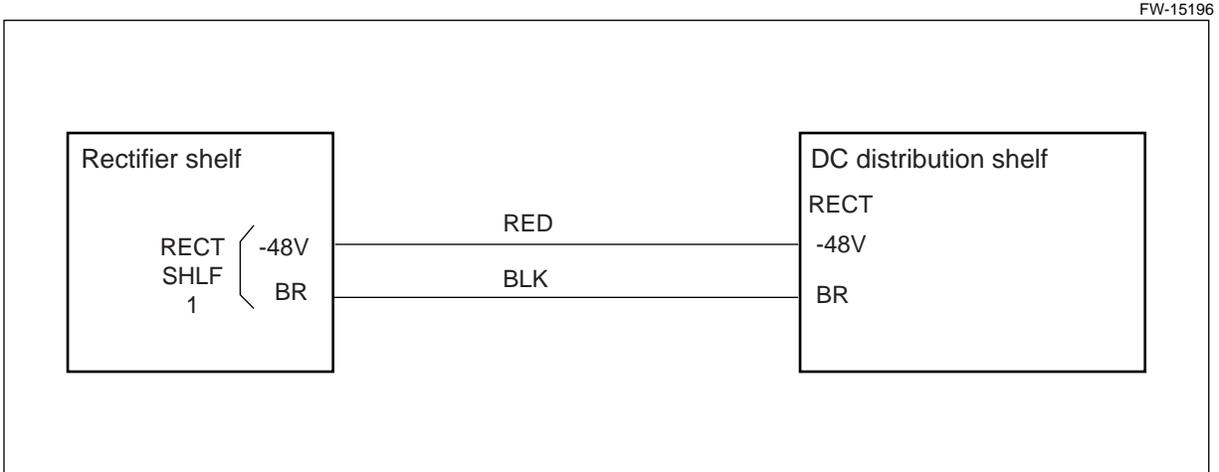
Rectifier dc output

The rectifier ac input connects to the ac outlet box assembly to the J1, J2 and J3 receptacles (see Figure 13-5 on page 13-10 and Figure 13-8 on page 13-15).

Output wiring

The rectifier dc output is factory wired to the dc distribution shelf as shown in Figure 13-10.

Figure 13-10
Rectifier output wiring



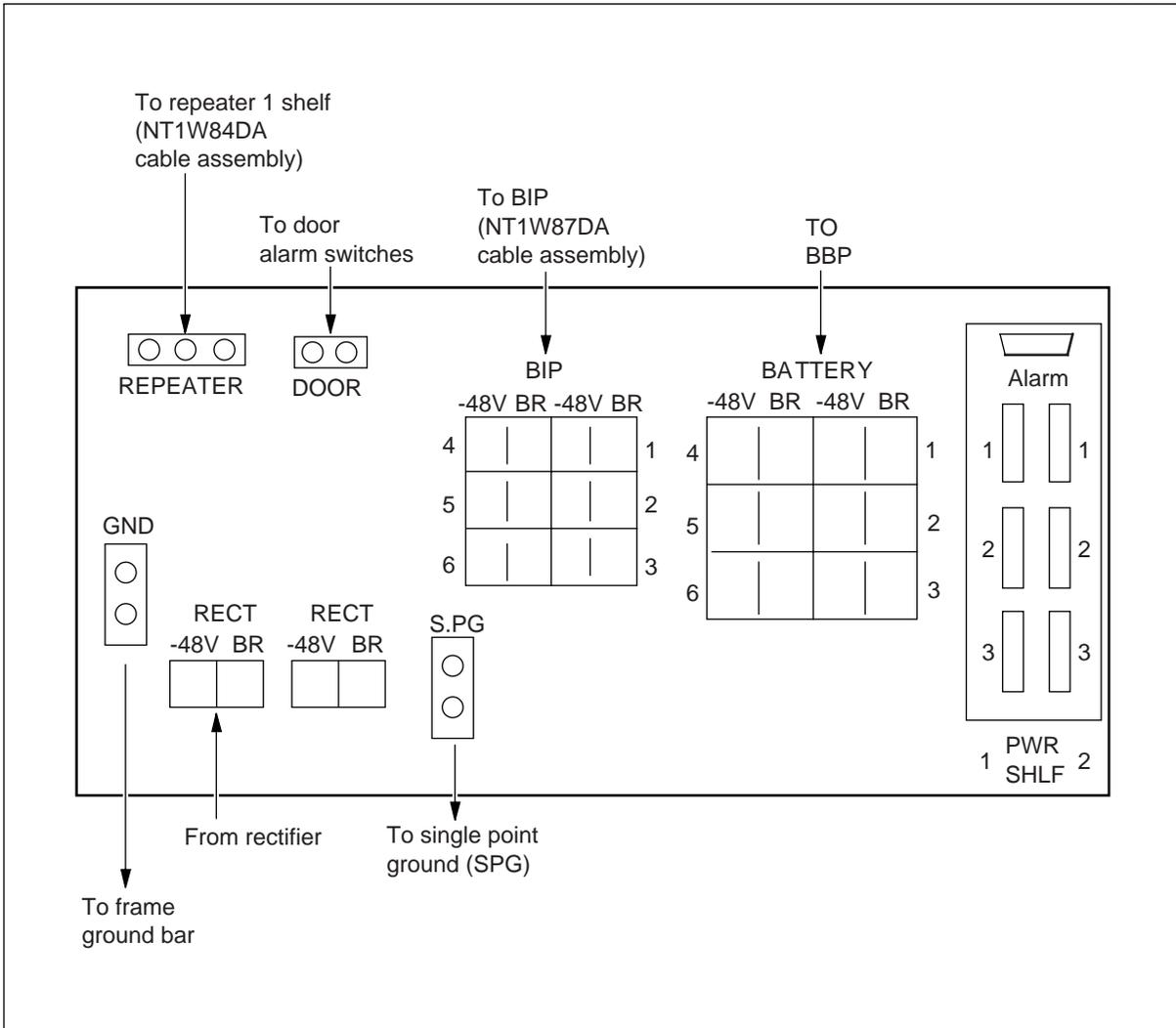
DC distribution shelf dc power wiring

The connection points on the dc distribution shelf (see Figure 13-11) for wiring and cabling are located at the rear of the shelf.

The dc distribution shelf is interconnected to the rectifier shelf (see Figure 13-10 on page 13-17), the battery interface panel, the T1 repeater shelf (see Figure 13-12 on page 13-20) and the battery breaker panel (see Figure 13-13 on page 13-21).

Figure 13-11
DC distribution panel wiring connections (rear view)

FW-15190



DC distribution shelf circuit breaker designations

Table 13-4 shows the breaker designations for the dc distributions shelf.

Table 13-4**DC distribution shelf breaker designations**

Breaker	Amperage	Designation
CB1	30A	BIP shelf Batt 1
CB2	30A	BIP shelf Batt 2
CB3	30A	BIP shelf Batt 3
CB4	30A	BIP shelf Batt 4
CB5	30A	Unused
CB6	30A	Unused
CB7	10A	Repeater shelf 1

Figure 13-12
DC distribution shelf to BIP, BBP and RPTR 1 wiring

FW-15192

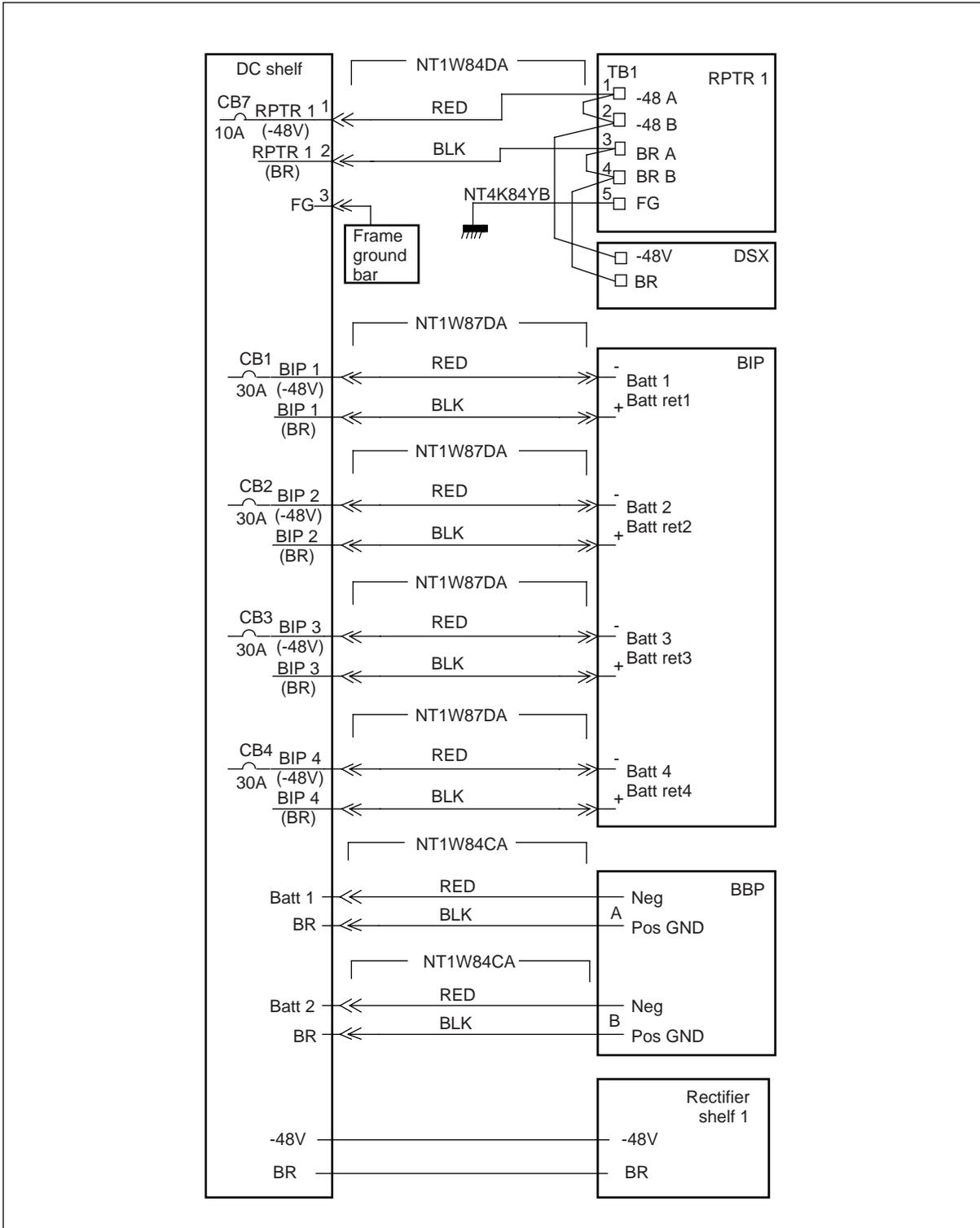
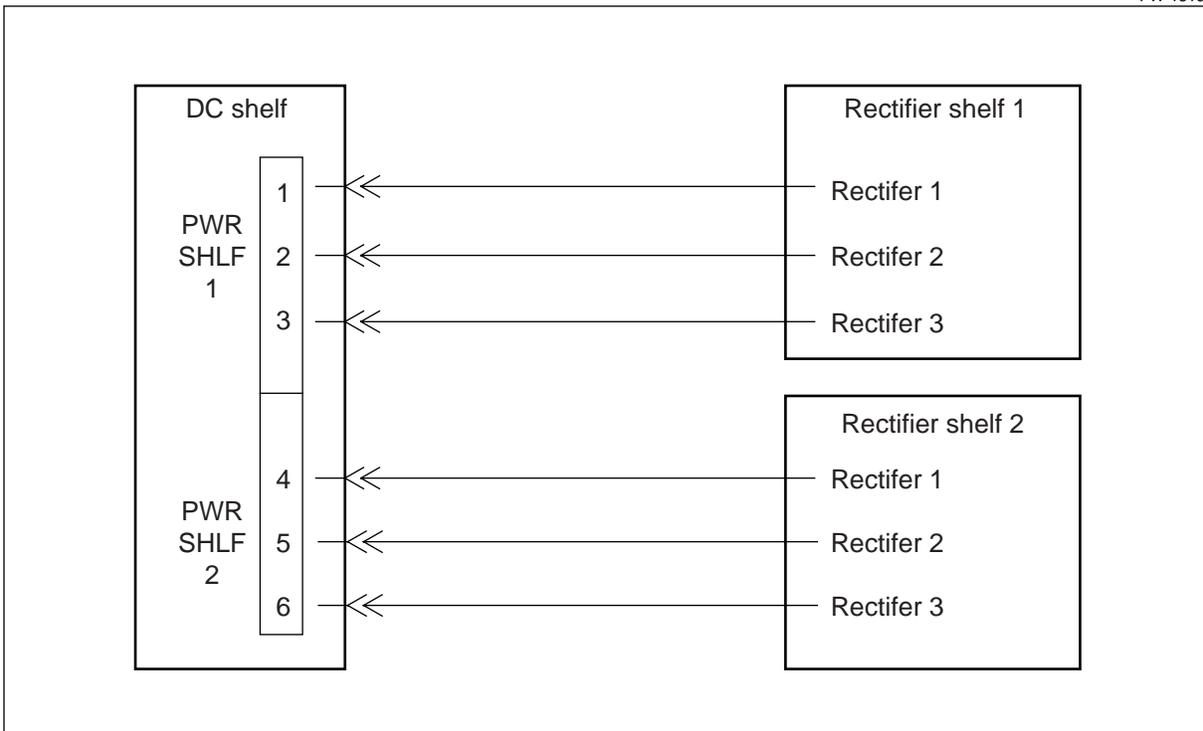


Figure 13-13
DC distribution shelf to rectifier shelf alarm wiring

FW-15191



Battery breaker panel dc power connections

The BBP is connected to the dc distribution shelf (see Figure 13-13 on page 13-21 and Figure 13-9 on page 13-16) through the BBP power terminals located at the rear of the unit (see Figure 13-14 below).

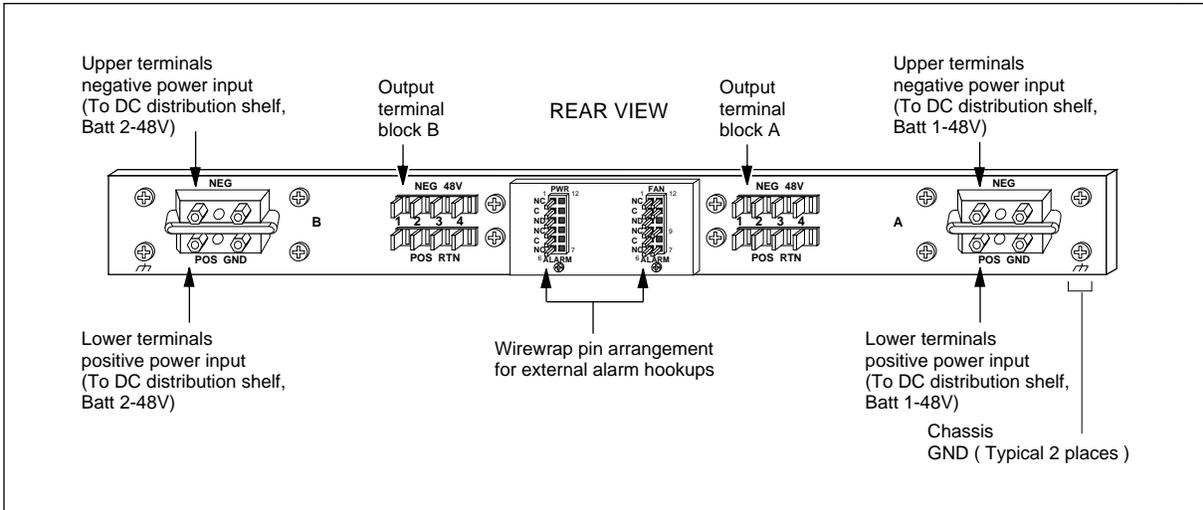
The back-up battery supply is channeled through the breaker interface connectors located in the rear left swing frame (see Figure 13-16 on page 13-25) to the BBP to the battery breakers (A1 through A4 and B2 through B4).

When the second repeater option is installed, the repeater 2 shelf is powered from the BBP through circuit breaker B1.

In addition to the dc powering, the BBP is the alarm monitoring connection points for the fan fail alarm circuit (see Figure 13-26 on page 13-38) and the dc power failure circuits for the CU A and CU B dc power outputs of the battery interface panel (see Figure 13-18 on page 13-28).

Figure 13-14
BBP rear view

FW-15247



Battery breaker panel circuit breaker designations

Table 13-5 shows the breaker designations for the BBP.

Table 13-5
Battery breaker designations

Breaker	Designation
CB A1	Battery string 1/2
CB A2	Battery string 3/4
CB A3	Battery string 5/6
CB A4	Battery string 7/8
CB B1	Repeater shelf 2
CB B2	Battery string 9/10
CB B3	Battery string 11/12
CB B4	Battery string 13/14

Figure 13-15 shows the battery interface connectors on the rear left swing frame adjacent to the BBP.

Figure 13-15
Battery interface connectors

FW-15155

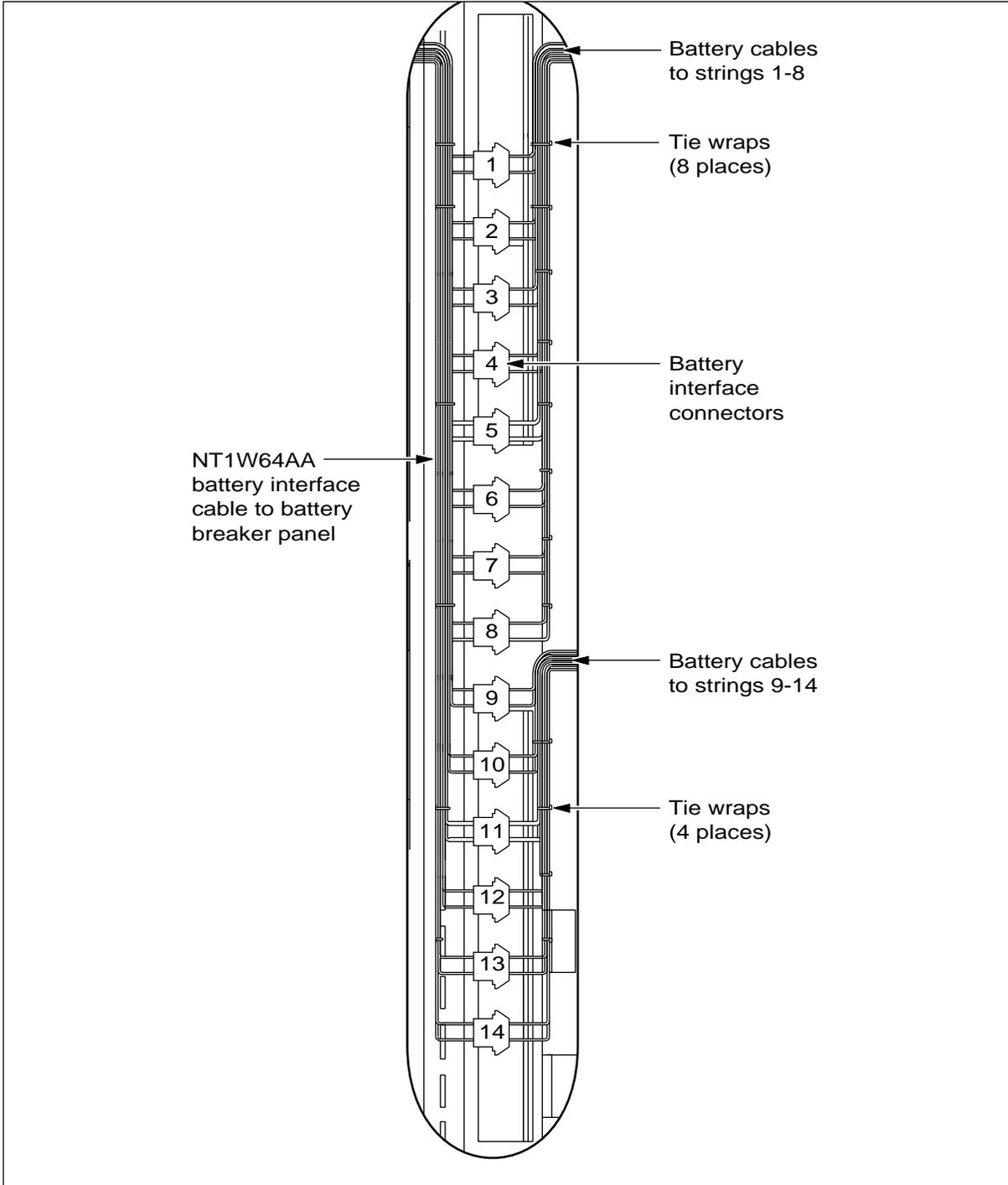
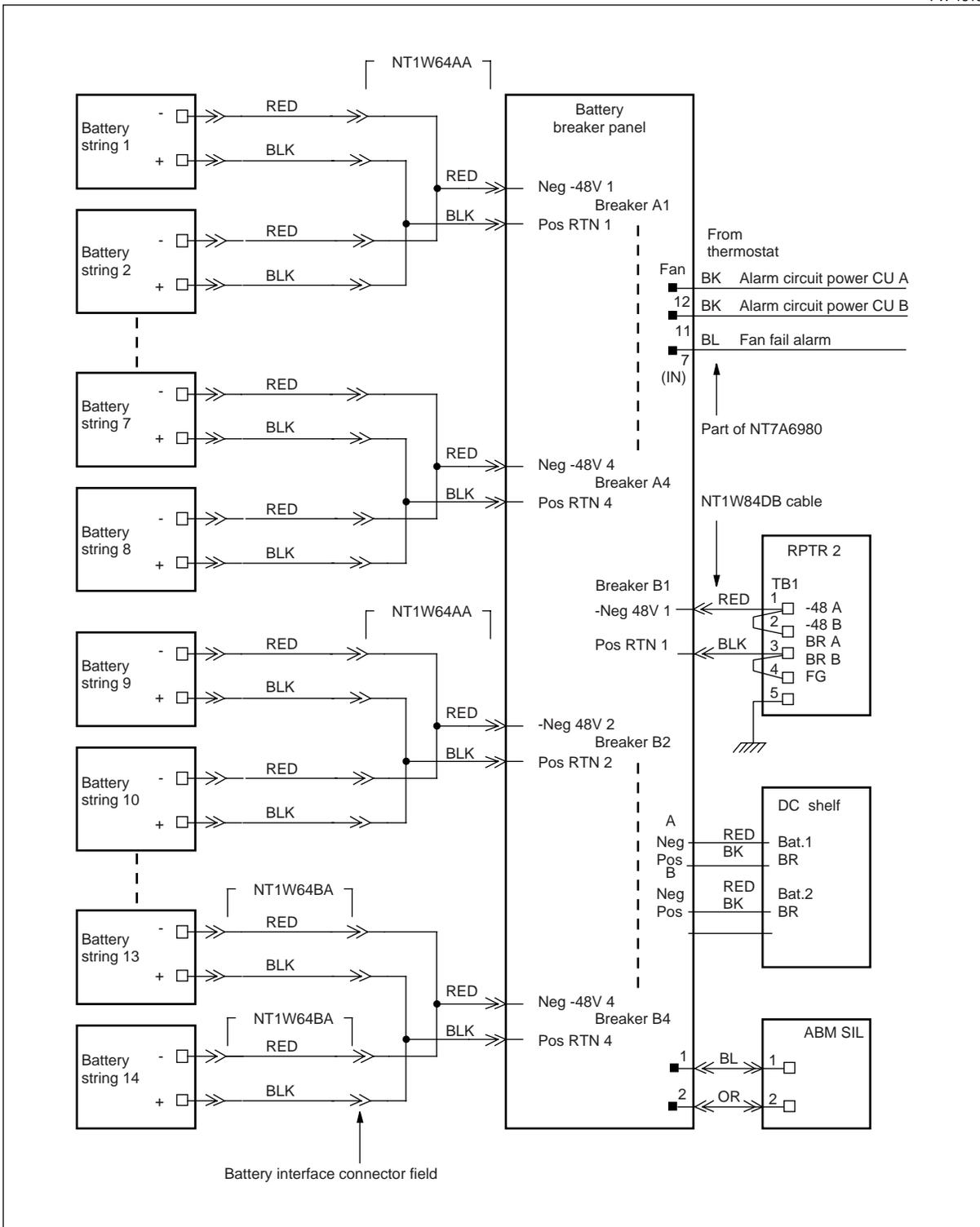


Figure 13-16
BBP cabling

FW-15183



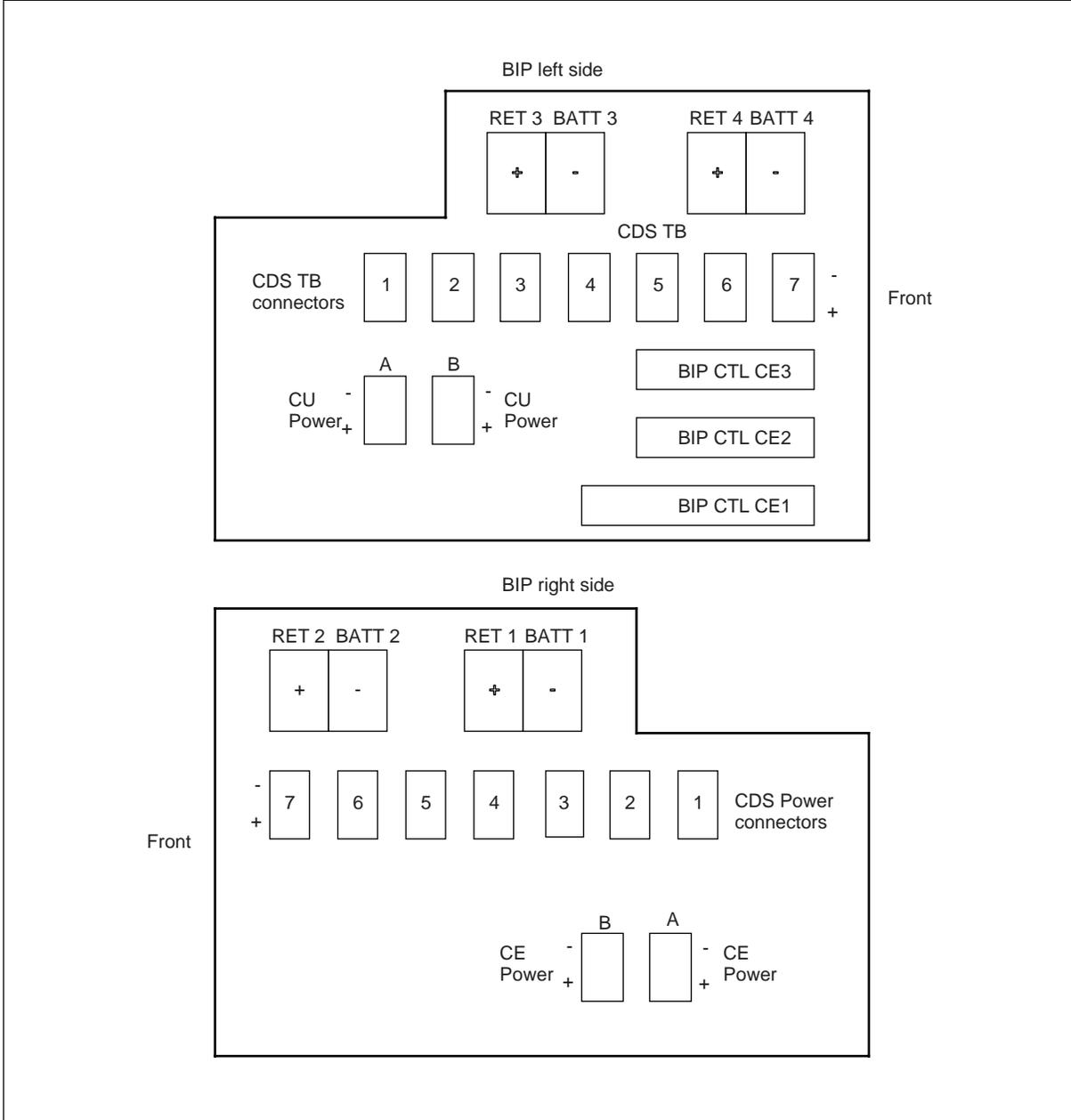
Breaker interface panel wiring

The BIP dc powering is connected from the appropriate circuit breakers of the dc distribution shelf to the BIP battery connectors at the rear of the panel (see Figure 13-12 on page 13-20).

Figure 13-17 shows the backplane connector field locations for the BIP.

Figure 13-17
BIP power connector locations

FW-15188



Breaker interface panel circuit breaker designations

Table 13-6 shows the BIP breaker designations.

Table 13-6
BIP breaker designations

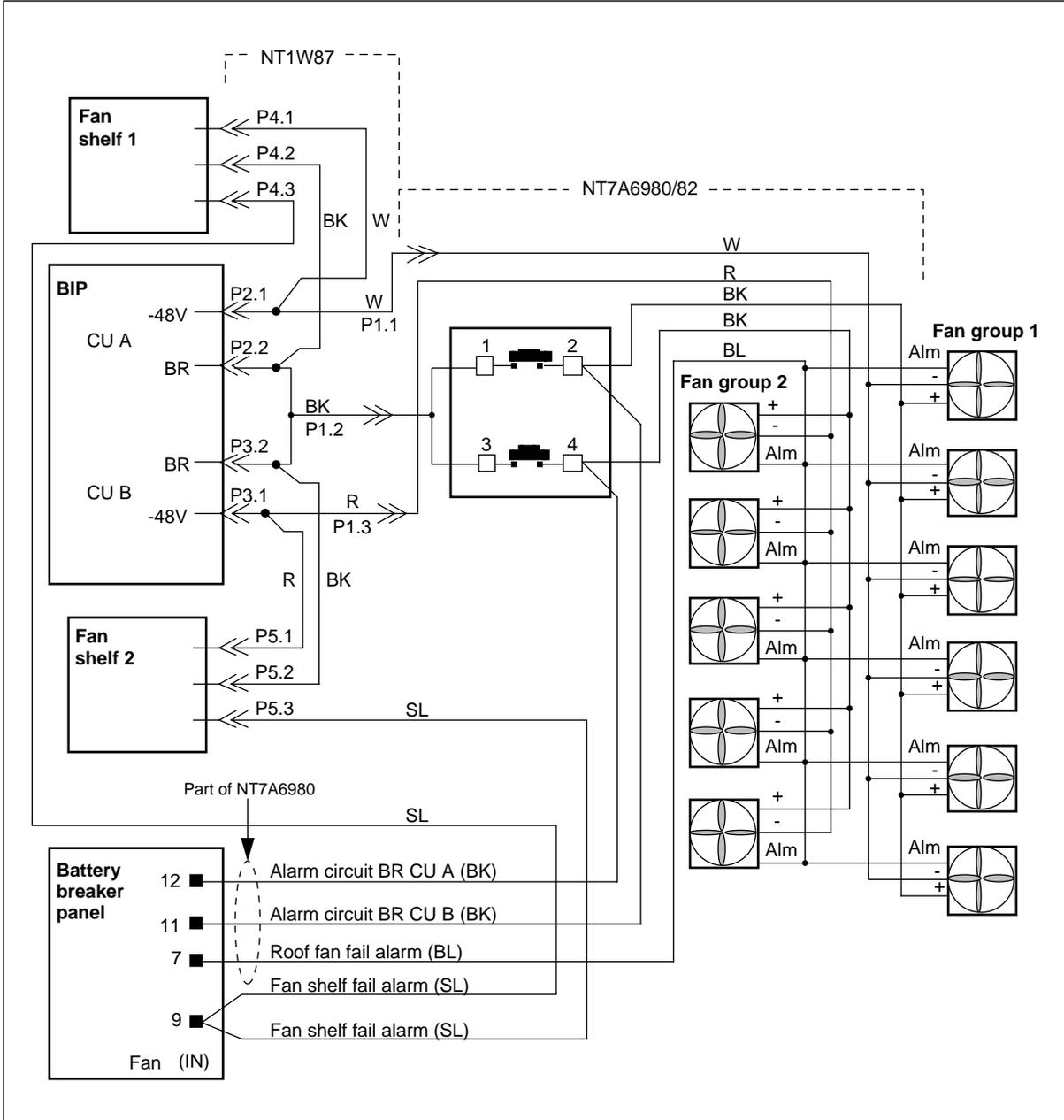
Breaker	Amperage	Designation
CE A	15A	ABM shelf A A I/O cards
CE B	15A	ABM shelf B A I/O cards
CDS1 PWR	15A	CDS1 power converters
CDS2 PWR	15A	CDS2 power converters
CDS3 PWR	15A	CDS3 power converters
CDS4 PWR	15A	CDS4 power converters
CDS5 PWR	15A	CDS5 power converters
CDS6 PWR	15A	CDS6 power converters
CDS7 PWR	15A	CDS7 power converters
CE 1	1A	ABM talk battery for TAC and MIC
CU A	15A	Cooling unit plane A
CU B	15A	Cooling unit plane B
CDS1 TB	10A	CDS1 talk battery
CDS2 TB	10A	CDS2 talk battery
CDS3 TB	10A	CDS3 talk battery
CDS4 TB	10A	CDS4 talk battery
CDS5 TB	10A	CDS5 talk battery
CDS6 TB	10A	CDS6 talk battery
CDS7 TB	10A	CDS7 talk battery

Fan power wiring

Circuit breakers CU A and CU B feed dc power to the fan units. Figure 13-18 details the fan powering diagram for dc power from the BIP.

Figure 13-18
BIP Fan powering wiring diagram

FW-15249



Breaker interface feed wiring

Figure 13-19 below through Figure 13-21 on page 13-31 show the BIP dc power distribution wiring diagram for battery inputs from the dc distribution shelf circuit breakers.

Figure 13-19
BIP dc power distribution feeds 1 and 2

FW-15184

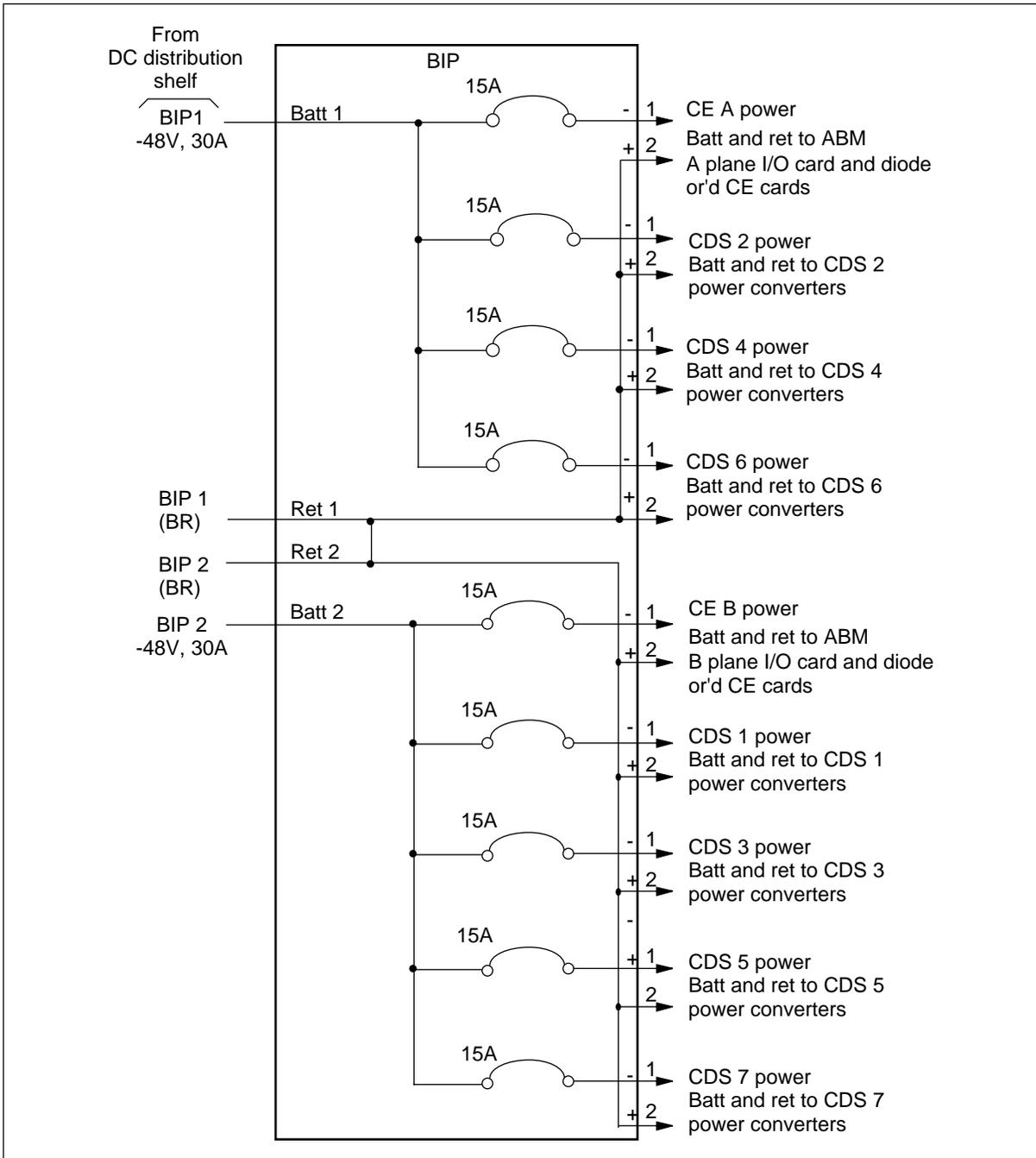


Figure 13-20
BIP dc power distribution feeds 3 and 4

FW-15185

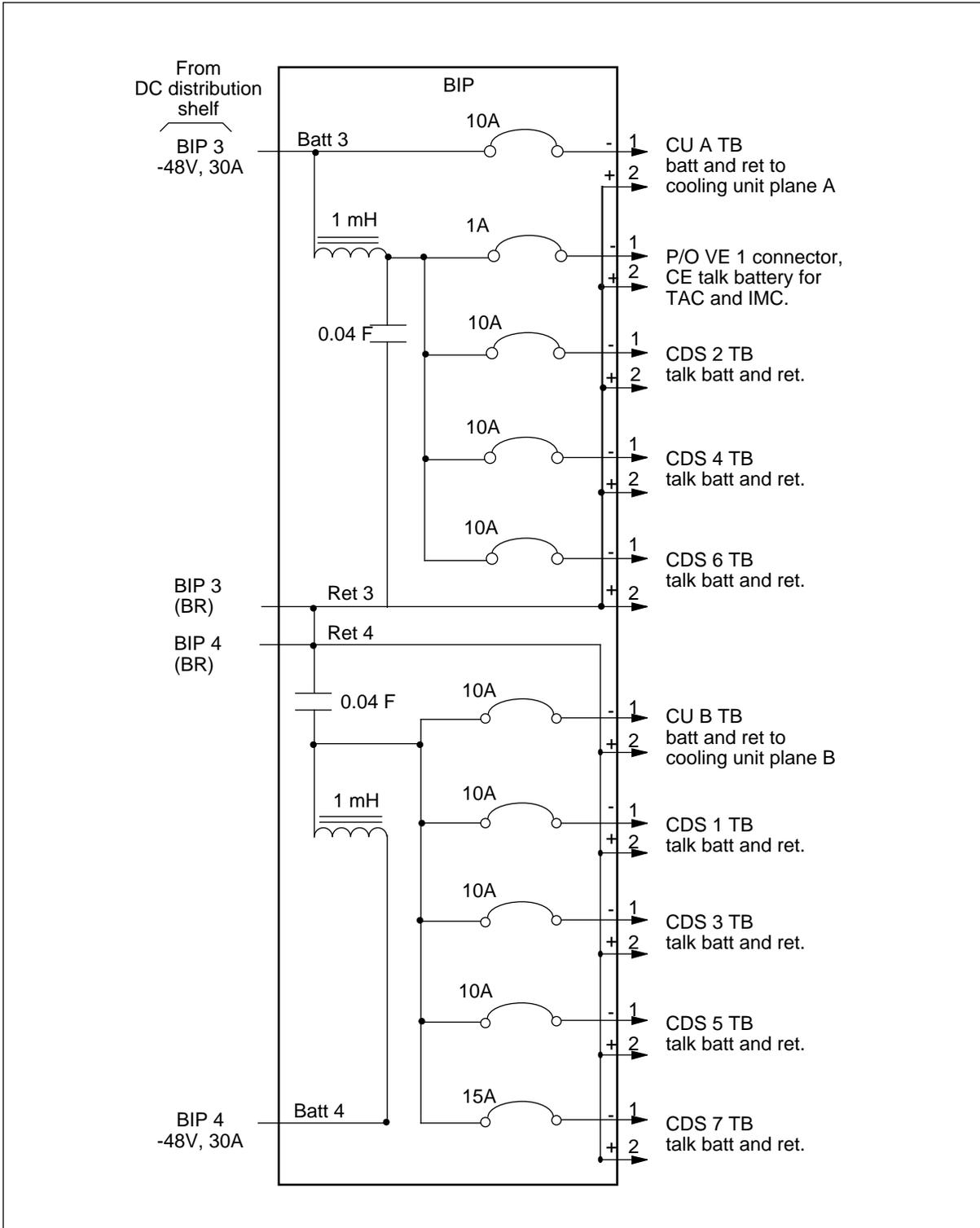
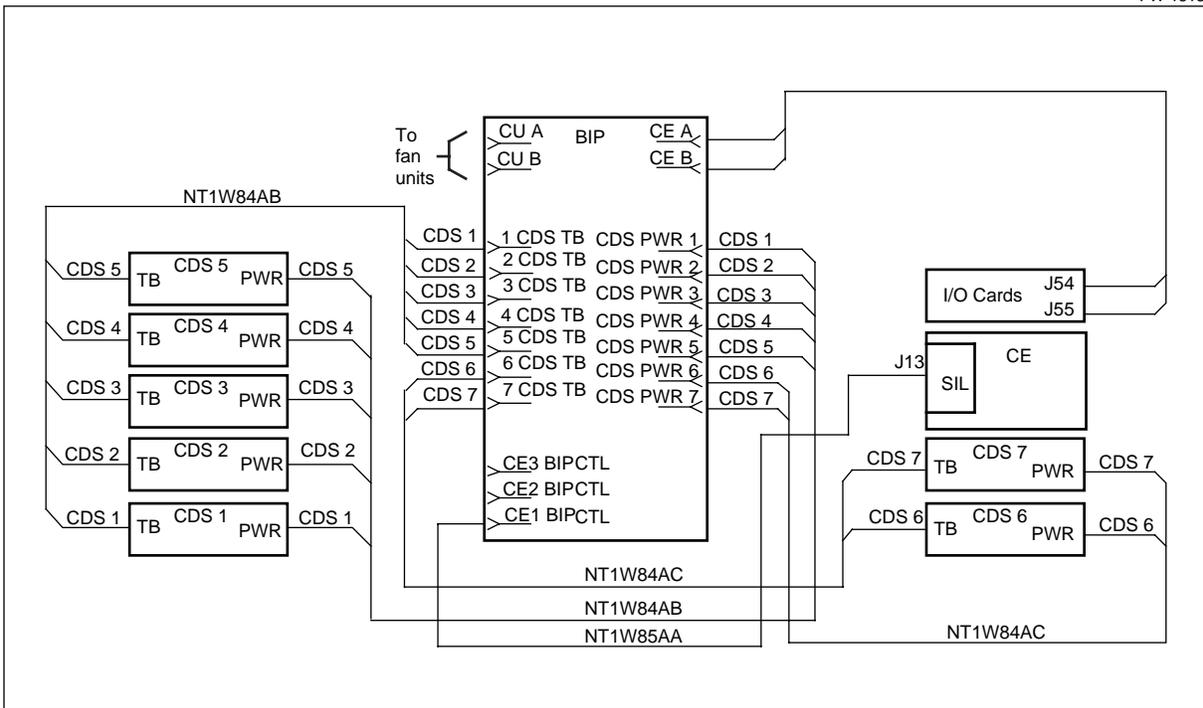


Figure 13-21
BIP power distribution and control cabling

FW-15187



Alarm wiring

Alarm wiring connects to the BIP pin field located on the front left of the BIP faceplate from the equipment external to the AccessNode.

Equipment external to the AccessNode is alarmed through the BIP via the pin field (see Table 13-7). Reference the specific shelf wiring and cabling section in this chapter for more information regarding alarm wiring.

The alarms are provisioned via AccessNode software. Refer to NTP 323-3001-302, *System Administration Procedures*, in *Operations, Administration, and Provisioning*, Volume 4A, for alarm provisioning information.

Alarm cabling and wiring is also detailed in Table 13-10 on page 13-43.

Table 13-7
Alarm wiring for E2A external connections

Scan point	Alarm description	Alarm severity	Source	Source connector and pin number	BIP Pin field pin number
1	AC FA	Minor	DC distribution shelf	14	1
1	AC FA RET		DC distribution shelf	15	2
2	LVA	Major	DC distribution shelf	3	3
3	REMOTE ACO	N/A	A/N		4
4	DOALM	Minor	Cabinet	7	6
5	LTEMP ALM	Major	Sensor		7
6	FA	Major	BBP/DC distribution shelf	5	9
7	PWR MN	Minor	DC distribution shelf	1	10
8	PWR MAJ	Major	DC distribution shelf	2	12
9	RPTR FA	Minor	RPTR 1, 2	Pos. 23, Pin 14	13
9	RPTR FA RET		RPTR 1, 2	Pos. 23, Pin 16	14
10	RPTR LOS	Minor	RPTR 1, 2	Pos. 23, Pin 8	15
10	RPTR LOS RET		RPTR 1, 2	Pos. 23, Pin 10	14
11	RPTR ERR	Minor	RPTR 1, 2	Pos. 23, Pin 2	16
11	RPTR ERR RET		RPTR 1, 2	Pos. 23, Pin 4	17
LGND	Alarm Reference		All of the above	Per Application	5, 8, 11, 18

Table 13-8 lists alarm types and definitions.

Table 13-8
Alarm information

Alarm	Definition
AC FA	<p>The ac failed alarm is connected from the dc shelf 15 pin D-Sub connector to an E2A input on the SIL card. It can be activated if the dc shelf is equipped with RPM1000C unit.</p> <p>If a separate ac monitoring device is used, then connections should be provided as shown in the Table 13-7.</p> <p>The contacts of the ac monitor relay must be open for normal operation and closed when an ac failure occurs.</p>
DOALM	<p>The door alarm is connected to the BIP wire wrap pin # 6 from the door switches located on the cabinet frame.</p>
LTEMP ALM	<p>A low temperature alarm is generated when the internal cabinet temperature falls below 32° F (0° C).</p>
FA	<p>The fuse alarm is set when a fuse and/or circuit breaker on the dc distribution shelf or battery breaker panel is tripped due to a fault load condition.</p> <p>The BBP fuse alarm (breaker trip alarm) outputs are wired from the "PWR" wire-wrap connector on the back panel of the BBP.</p>
PWR MN	<p>Indicates that the cabinet power source (consisting of dc distribution shelf, rectifier shelf, battery breaker panel and batteries) has a minor alarm set.</p> <p>The alarm shall be identified through the modem terminal provided in the dc distribution shelf.</p>
PWR MJ	<p>The pwr min alarm indicates that the cabinet power source has a major alarm set.</p> <p>The alarm shall be identified through the modem terminal provided in the dc distribution shelf.</p>
RPTR FA	<p>The rptr fa indicates that one or more repeaters have a power fuse open.</p>
RPTR LOS	<p>The rptr loss alarm indicates that one or more repeaters are experiencing a loss of signal from span.</p>
RPTR ERR	<p>The rptr err alarm indicates that one or more repeaters are receiving excessive bipolar violations.</p>

Note: Repeater shelf 1 and shelf 2 alarms are paralleled on the BIP pin field. It means that the source of an alarm could be either one of the repeater shelves.

Access bandwidth manager shelf wiring and cabling

The ABM shelf connections are accessed at the side interconnect left (SIL) connector panel mounted on the left side of the shelf (see Figure 13-22 on page 13-35). The side interconnect right (SIR) connector panel is mounted on the right side of the shelf (see Figure 13-31 on page 13-46).

SIL card connectors and wiring

The SIL connector wiring information is included in this section. Plugs and connectors are provided for connections to the BIP, the BBP, the dc distribution shelf, and the local craft access panel (LCAP).

The SIL connectors provide both in-bay connections and connections for external use. The connectors for internal bay connection are:

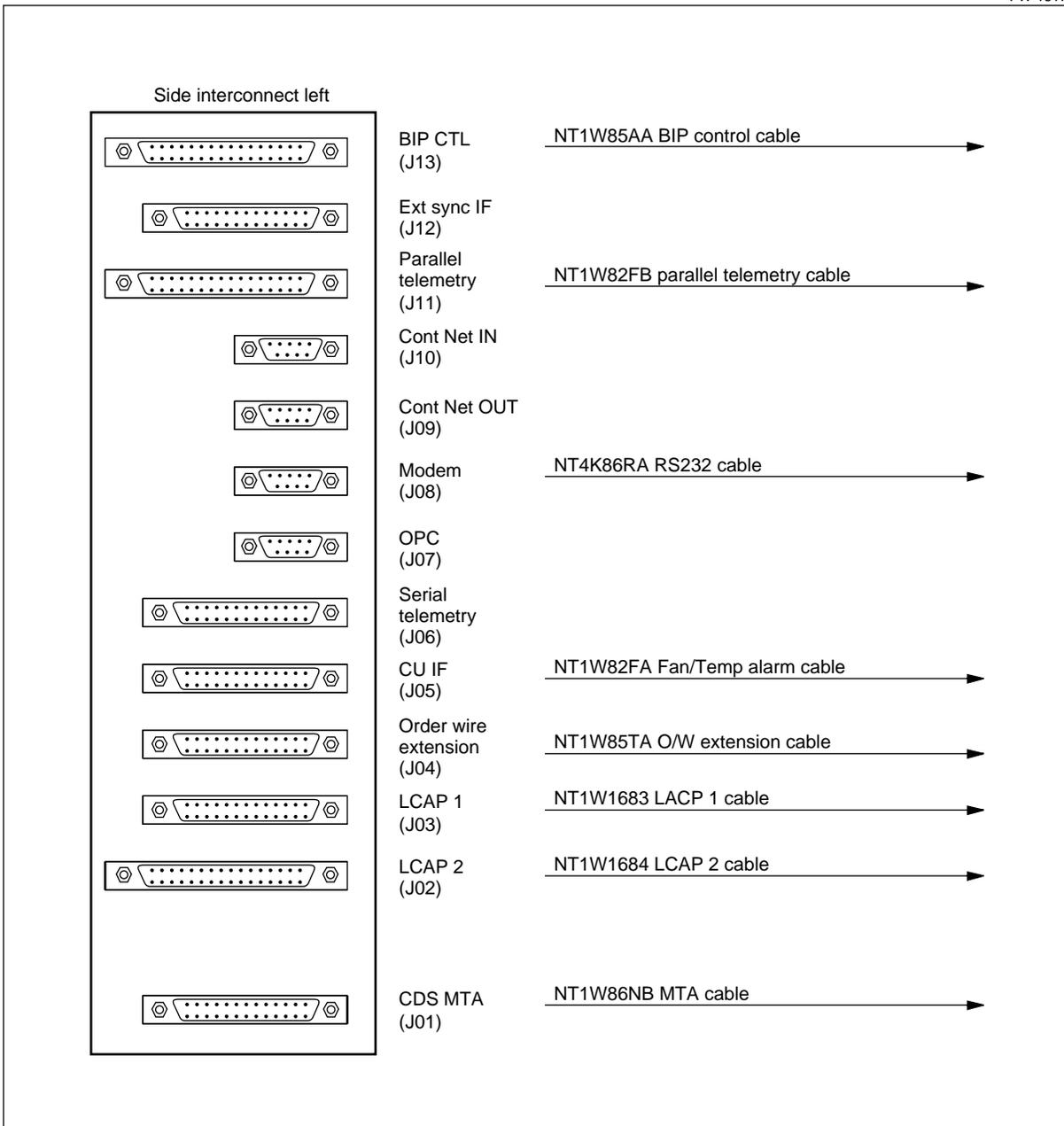
- J01 - copper-distribution shelf metallic test access (CDS MTA), 25-Pin
- J02 - Local craft access panel cable 2 (LCAP 2), 25-Pin
- J03 - Local craft access panel cable 1 (LCAP 1), 44-Pin
- J05 - Cooling unit interface (CU IF), 9-Pin
- J13 - Breaker interface panel control (BIP Ctl), 44-Pin

The connectors for external connections are:

- J04 - Orderwire extension, 25-Pin
- J06 - Serial telemetry, 25-Pin
- J07 - Operations controller (OPC) RS232 to VT100, 9-Pin
- J08 - Modem RS232 DTE, 9-Pin
- J09 - Cont net Out, 9-Pin
- J10 - Cont net In, 9-Pin
- J11 - Parallel telemetry, 44-Pin
- J12 - External sync IF, 25-Pin

Figure 13-22
SIL card connector layout

FW-15175

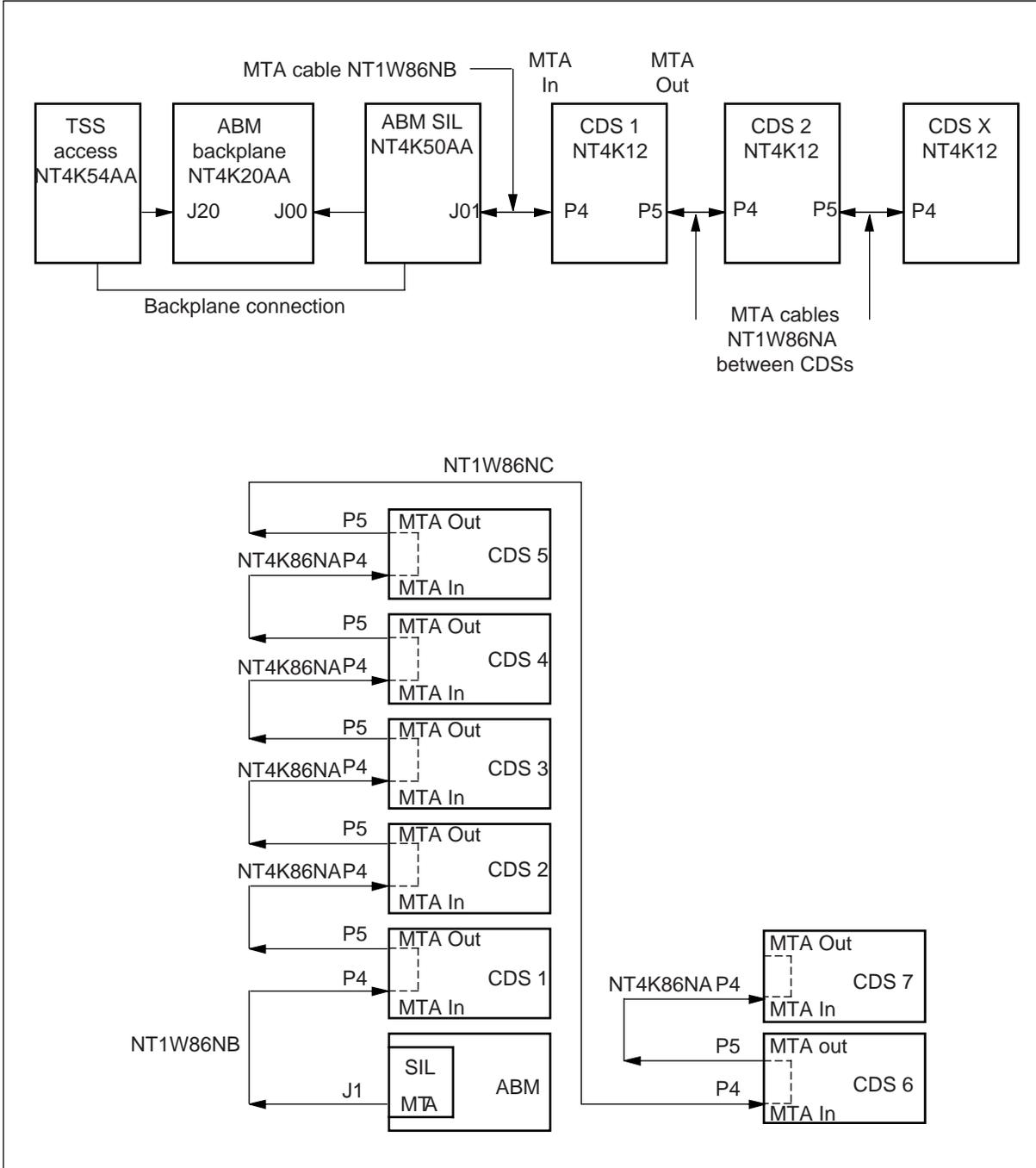


Metallic test access (MTA) cable wiring

Figure 13-23 shows the MTA cable wiring block diagram to the ABM shelf SIL (J01) from the CDS shelves.

Figure 13-23
SIL J01 CDS MTA cable wiring block diagram

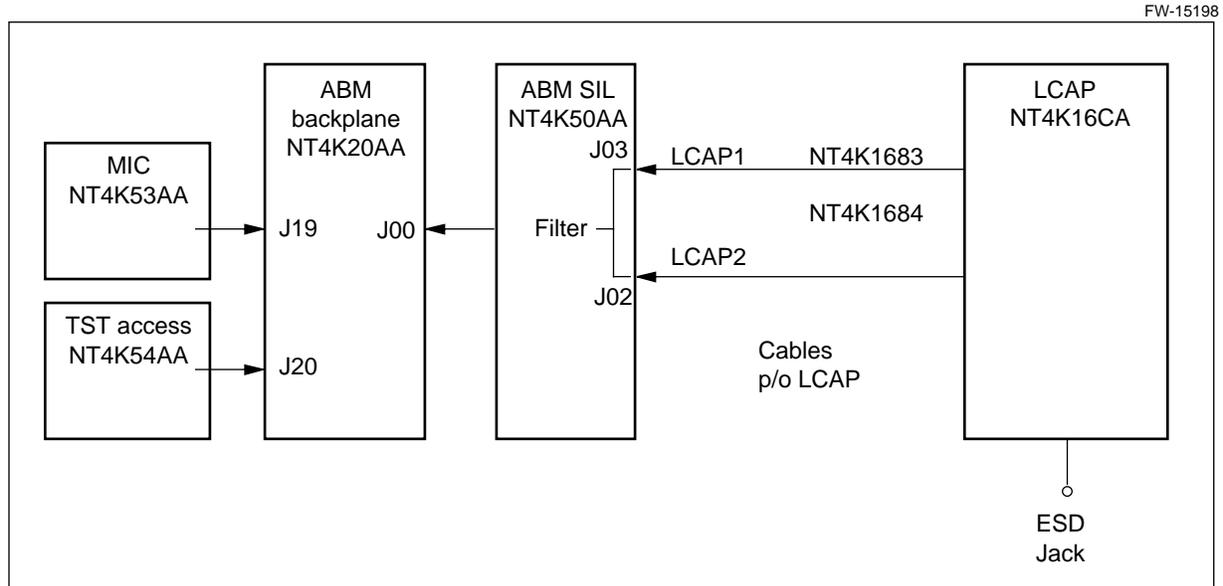
FW-15197



Local craft access panel (LCAP) wiring

Figure 13-24 shows the LCAP cable wiring block diagram to the ABM shelf SIL (J02/J03) from the LCAP.

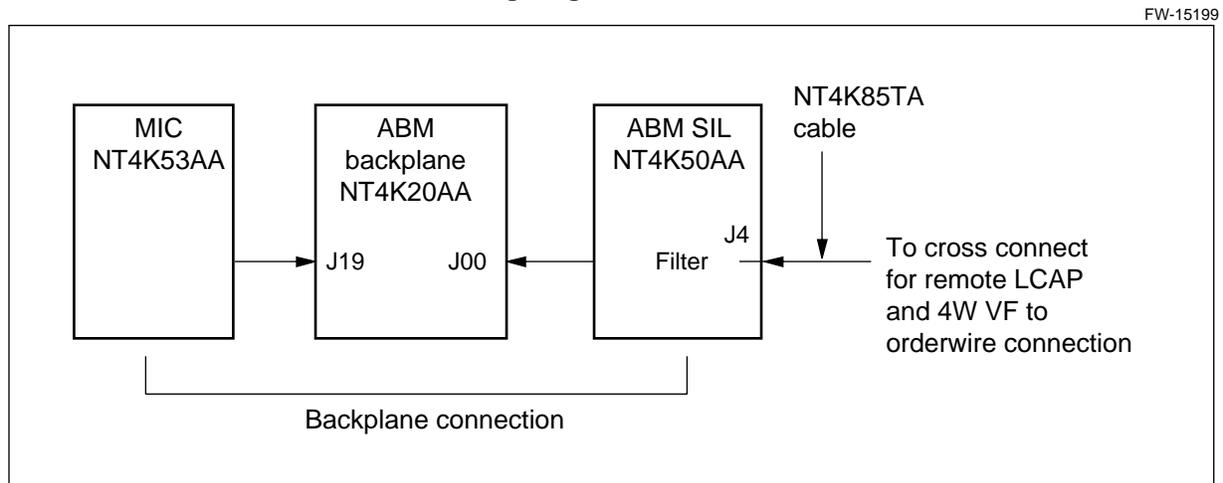
Figure 13-24
SIL J02/J03 LCAP cable wiring diagram



Orderwire extension wiring

Figure 13-25 shows the orderwire extension cable wiring block diagram to the ABM shelf SIL (J04) from the LCAP shelf.

Figure 13-25
SIL J04 orderwire extension cable wiring diagram



Fan and Temperature alarm circuit

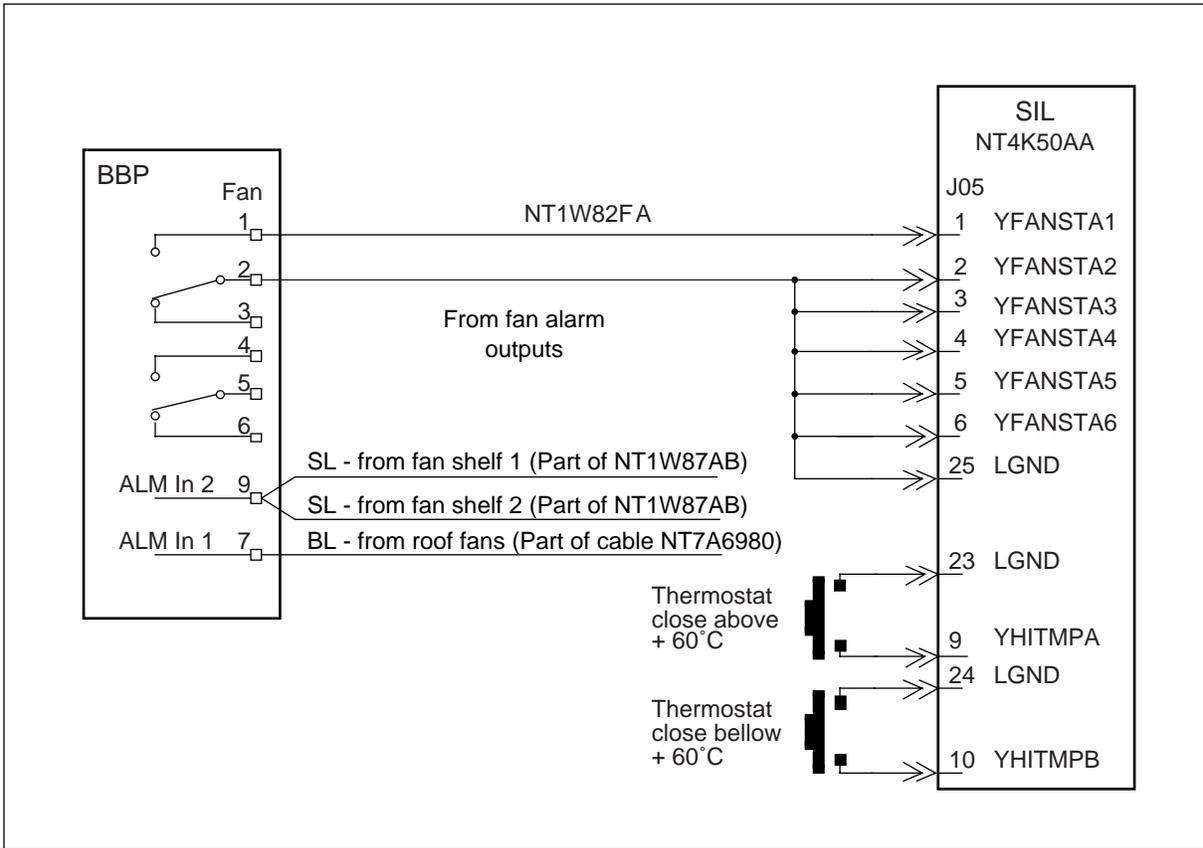
Fan and high temperature alarm wiring in the S800A cabinet is connected from the fan assemblies (see Figure 13-18 on page 13-28) to the BBP and then to the SIL.

The low temperature alarm sensor is wired to the BIP wire-wrap block pins 7 and 8.

Figure 13-26 shows the fan and temperature alarm wiring diagram to the ABM shelf SIL (J05) from the BBP.

Figure 13-26
SIL J05 FAN and TEMP alarm circuit wiring diagram

FW-15250

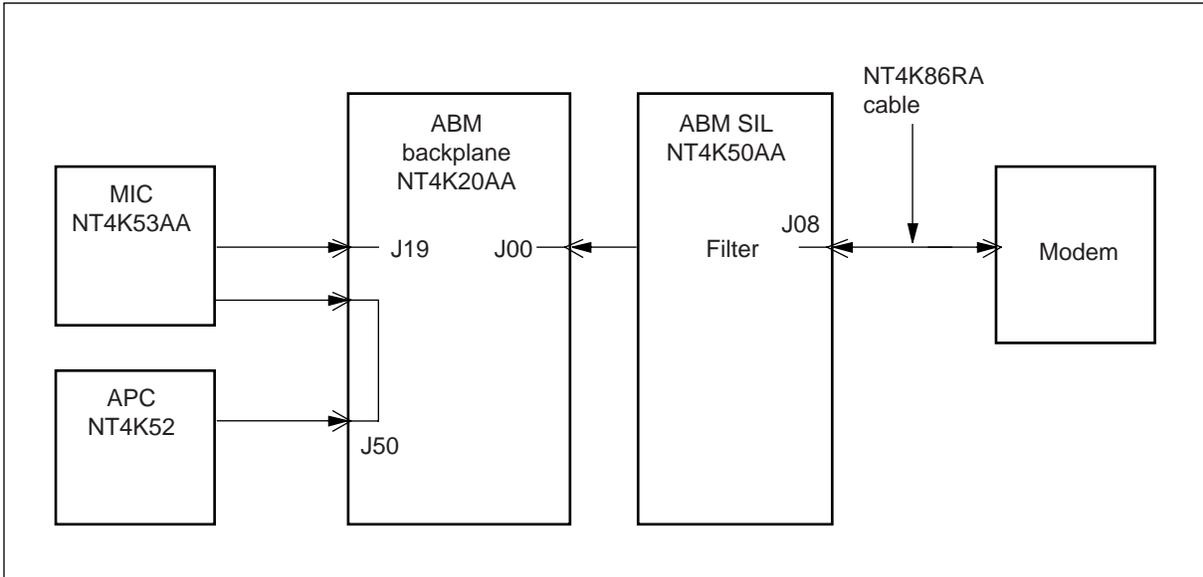


MODEM wiring and cabling

Figure 13-27 shows the RS232 cable wiring block diagram to the MODEM SIL (J08) from the modem.

Figure 13-27
SIL J08 modem cable wiring diagram

FW-15201



Parallel telemetry wiring and cabling

Part of control cable NT1W85AA carries information from the BIP pin field to SIL card in parallel with connector J11. DC distribution shelf alarms are connected to J11 on the SIL card via cable NT1W82FB (see Figure 13-28).

Figure 13-28
SIL J11 parallel telemetry wiring block diagram

FW-15202

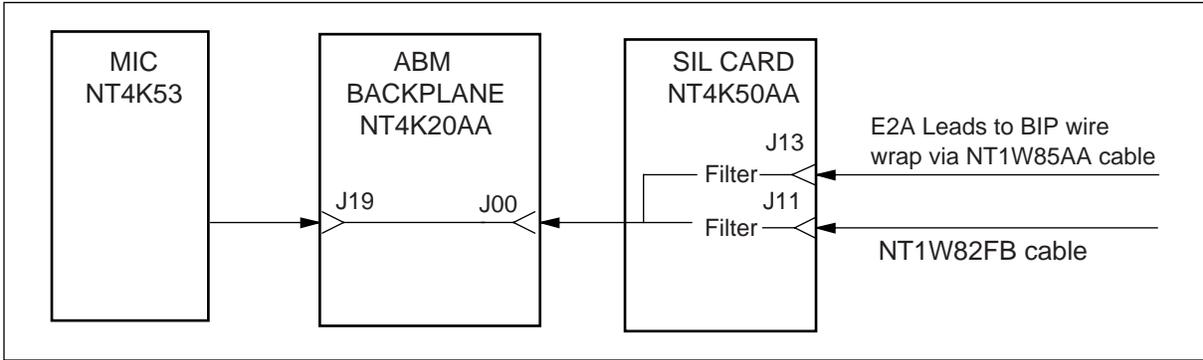


Table 13-9 shows the E2A parallel telemetry alarm cabling connections.

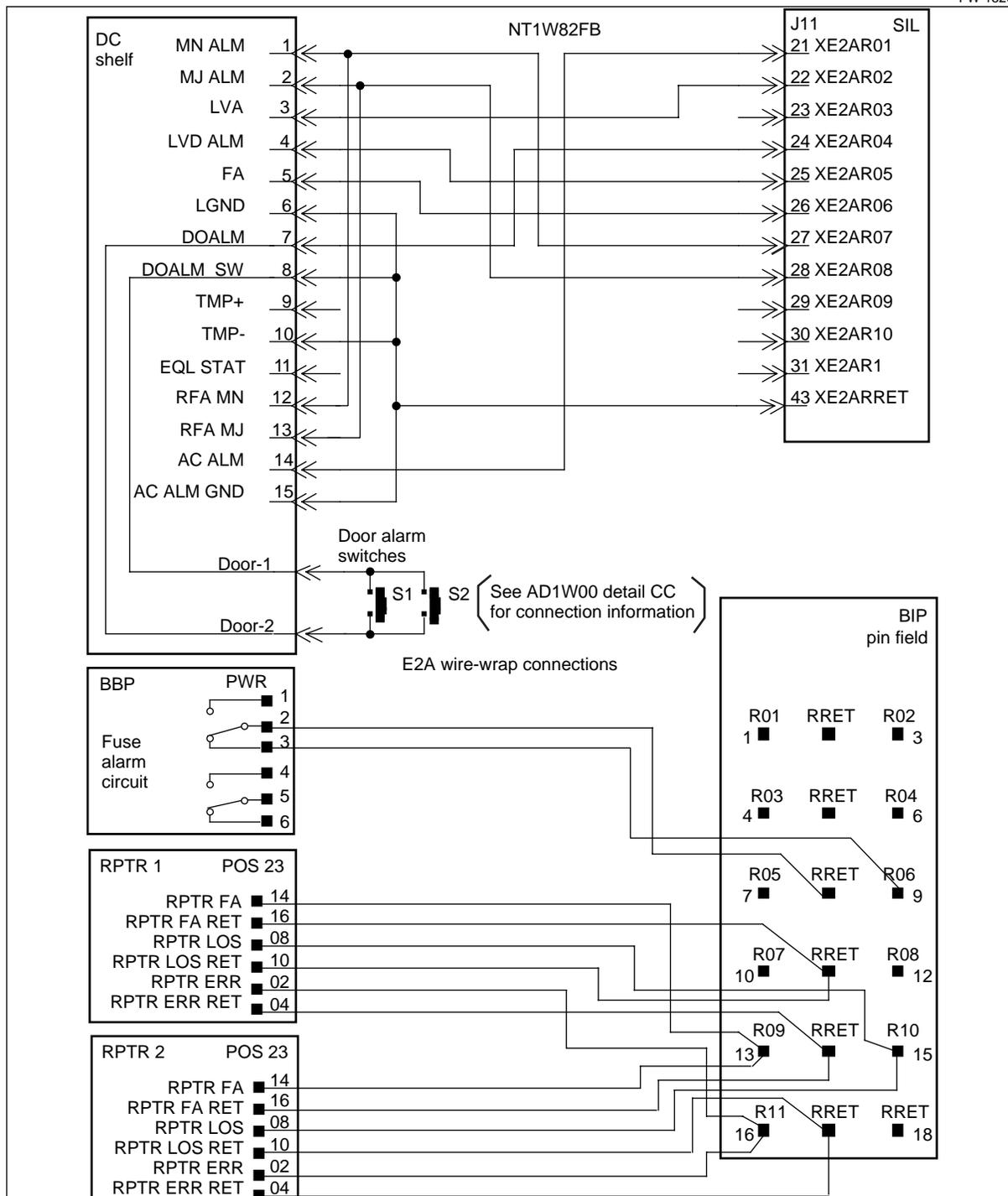
Table 13-9
E2A parallel telemetry alarm cabling - dc distribution shelf

Signal Name	E2A Signal Name	From	To	Color
AC ALM	XE2AR01	DC distribution shelf	J1.14 SIL J11 Pin 21	BL1W
LVA	XE2AR02	DC distribution shelf	J1.3 SIL J11 Pin 22	BL2W
ACO	XE2AR03	N.C.	N.C.	N.C.
DOALM	XE2AR04	DC distribution shelf	J1.7 SIL J11 Pin 24	O1W
LTEMP ALM	XE2AR05	Low Temp sensor	BIP pin 7	BK
FA	XE2AR06	DC distribution shelf	J1.5 SIL J11 Pin 26	G1W
MN	XE2AR07	DC distribution shelf	J1.1 SIL J11 Pin 27	G2W
MJ	XE2AR08	DC distribution shelf	J1.2 SIL J11 Pin 28	BR1W
RFA MN	XE2AR07	DC distribution shelf	J1.12 DC distribution shelf	
RFA MJ	XE2AR08	DC distribution shelf	J1.13 DC distribution shelf	
LGND	XE2ARRET	DC distribution shelf	J1.6 DC distribution shelf	
LGND	XE2ARRET	DC distribution shelf	J1.8 DC distribution shelf	
LGND	XE2ARRET	DC distribution shelf	J1.10 DC distribution shelf	
LGND	XE2ARRET	DC distribution shelf	J1.15 SIL J11 Pin 43	

Figure 13-29 shows the parallel telemetry cable wiring diagram from the ABM shelf SIL (J11).

Figure 13-29
SIL J11 parallel telemetry cable schematic

FW-15203



BIP control cable wiring

Figure 13-30 shows the BIP Control cable wiring diagram from the ABM shelf SIL J13 connector.

Figure 13-30
SIL J13 BIP control cable (BIP CTL) block diagram

FW-15204

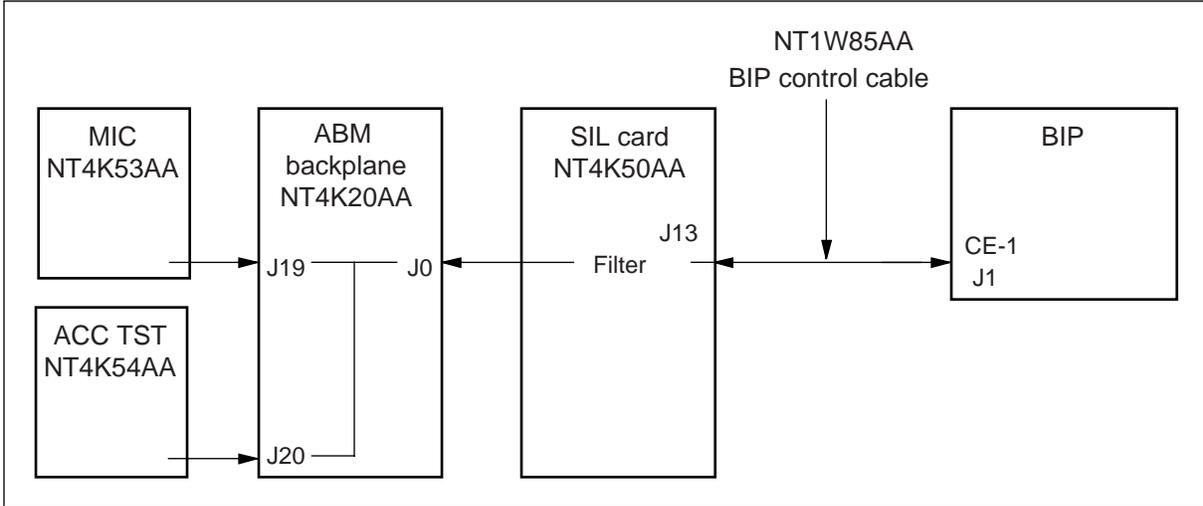


Table 13-10 shows the E2A external alarm wire-wrap connections to the BIP.

Table 13-10
E2A external alarm connections

Signal name	E2A signal name	From		To	
FA	XE2AR06	BBP	FUSE-1	BIP	PIN 9
FA RET	XE2ARRET	BBP	FUSE-2	BIP	PIN 8
RPTR FA	XE2AR09	RPTR 1	POS23.14	BIP	PIN 13
RPTR FA RET	XE2ARRET	RPTR 1	POS23.16	BIP	PIN 11
RPTR LOS	XE2AR10	RPTR 1	POS23.08	BIP	PIN 15
RPTR LOS RET	XE2ARRET	RPTR 1	POS23.10	BIP	PIN 11
RPTR ERR	XE2AR11	RPTR 1	POS23.02	BIP	PIN 16
RPTR ERR RET	XE2ARRET	RPTR 1	POS23.04	BIP	PIN 14
RPTR FA	XE2AR09	RPTR 2	POS23.14	BIP	PIN 13
RPTR FA RET	XE2ARRET	RPTR 2	POS23.16	BIP	PIN 14
RPTR LOS	XE2AR10	RPTR 2	POS23.08	BIP	PIN 15
RPTR LOS RET	XE2ARRET	RPTR 2	POS23.10	BIP	PIN 17
RPTR ERR	XE2AR11	RPTR 2	POS23.02	BIP	PIN 16
RPTR ERR RET	XE2ARRET	RPTR 2	POS23.04	BIP	PIN 17

SIR card connectors and wiring

The side interface right (SIR) card connector field (see Figure 13-31 on page 13-46) is located on the right-hand side of the ABM shelf.

The SIR connectors provide high-speed digital cable links to the CDS for VF lines. The VT and D links are numbered from the bottom left line drawer (1) to the bottom right line drawer in sequence to the top line shelf. This is in the same numbering sequence as the VF lines, that is, from the bottom shelf left drawer for line one (1) to the top shelf right drawer for line six hundred seventy-two (672).

The VT and D 44-Pin D-sub connectors and the designations for each is shown in Table 13-11 on page 13-45.

Figure 13-31 on page 13-46 shows the SIR card connector layout.

Figure 13-32 on page 13-47 shows the 44-Pin D-sub connector pin locations and layout.

Figure 13-33 on page 13-48 shows the SIR card connector wiring block diagram for the access link cabling.

Table 13-11 lists the VT and D link mapping to the CDS.

Table 13-11
SIR connector VT and D link mapping to CDS

Connector	VT &D link	Line drawer	Line shelf	Line number
J01	1A	1	CDS1	1- 48
J02	1B	1	CDS1	1- 48
J01	2A	2	CDS1	49- 96
J02	2B	2	CDS1	49- 96
J03	3A	1	CDS2	101-148
J04	3B	1	CDS2	101-148
J03	4A	2	CDS2	149-196
J04	4B	2	CDS2	149-196
J05	5A	1	CDS3	201-248
J06	5B	1	CDS3	201-248
J05	6A	2	CDS3	249-296
J06	6B	2	CDS3	249-296
J07	7A	1	CDS4	301-348
J08	7B	1	CDS4	301-348
J07	8A	2	CDS4	349-396
J08	8B	2	CDS4	349-396
J09	9A	1	CDS5	401-448
J10	9B	1	CDS5	401-448
J09	10A	2	CDS5	449-496
J10	10B	2	CDS5	449-496
J11	11A	1	CDS6	501-548
J12	11B	1	CDS6	501-548
J11	12A	2	CDS6	549-596
J12	12B	2	CDS6	549-596
J13	13A	1	CDS7	601-648
J14	13B	1	CDS7	601-648
J13	14A	2	CDS7	649-696
J14	14B	2	CDS7	649-696

Figure 13-31
SIR card connector field layout

FW-15176

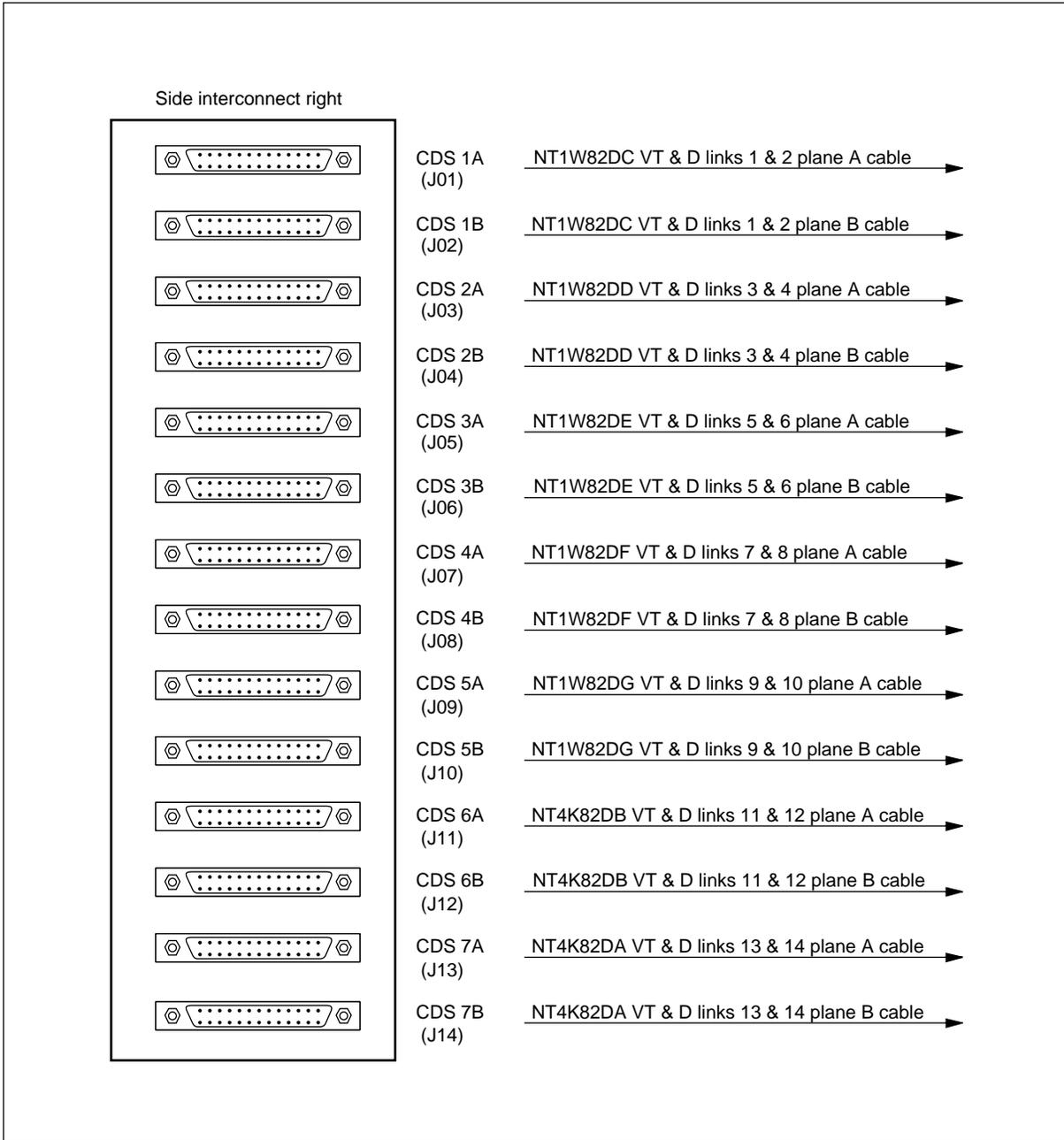


Figure 13-32
SIR 44-pin D-sub connector layout

FW-15205

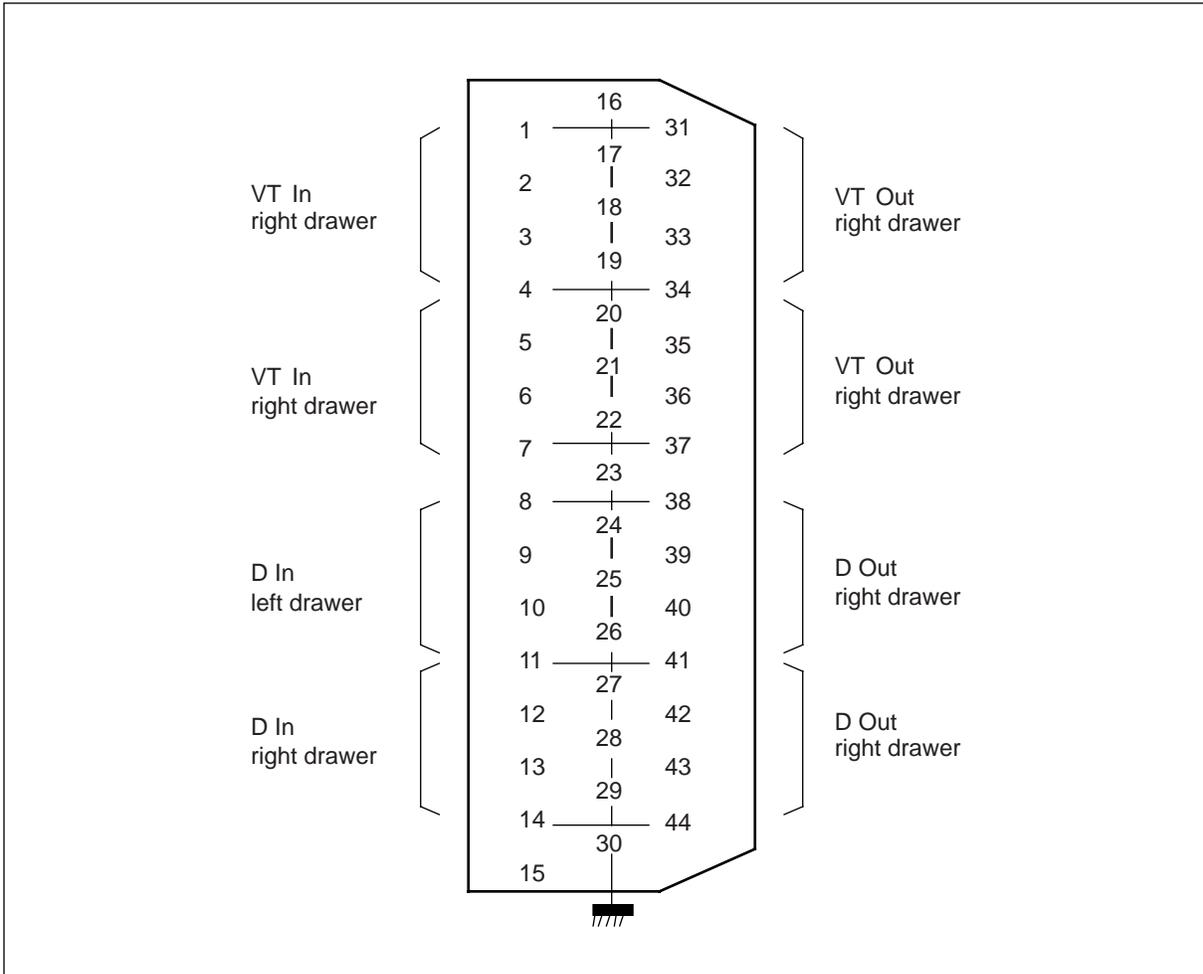
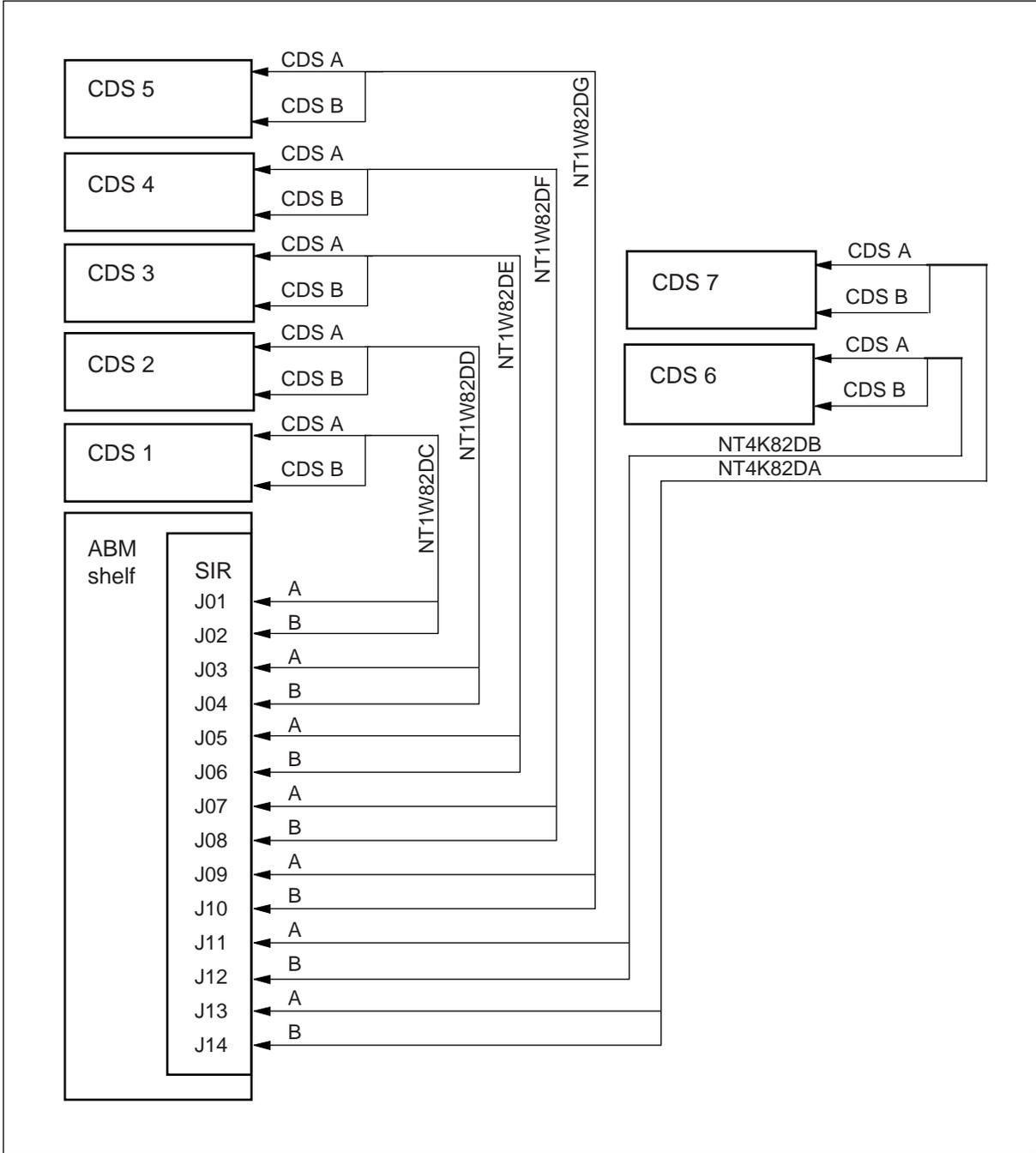


Figure 13-33
SIR access link to CDS wiring block diagram

FW-15206



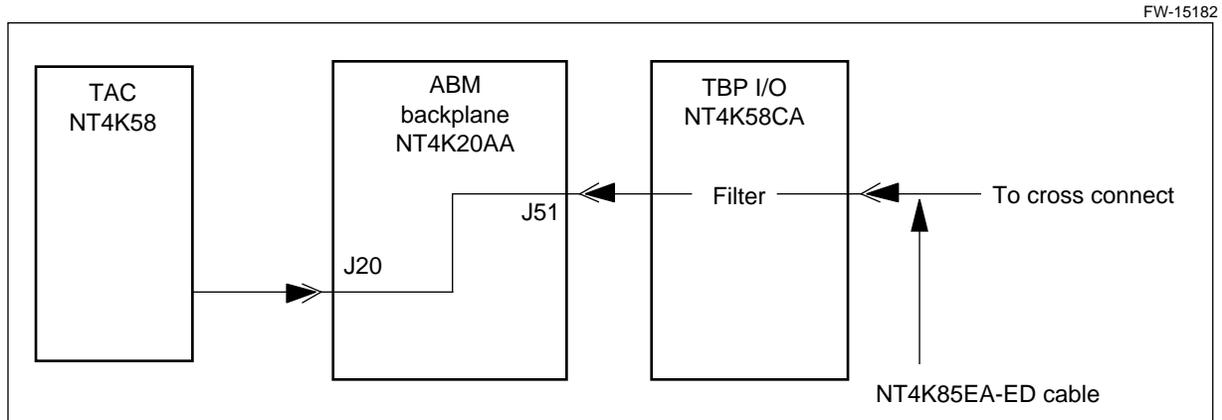
Test bypass pair I/O

The test bypass pair (TBP) I/O filter card (NT4K58CA), mounted in position 51 of the ABM I/O section, connects to one of four test bypass pairs with cables NT4K85EA-ED.

The NT4K85EA-ED cables are not terminated. These connections to the cross-connect facilities are defined by the customer.

Figure 13-34 shows the TBP wiring block diagram.

Figure 13-34
Test bypass pair I/O wiring block diagram

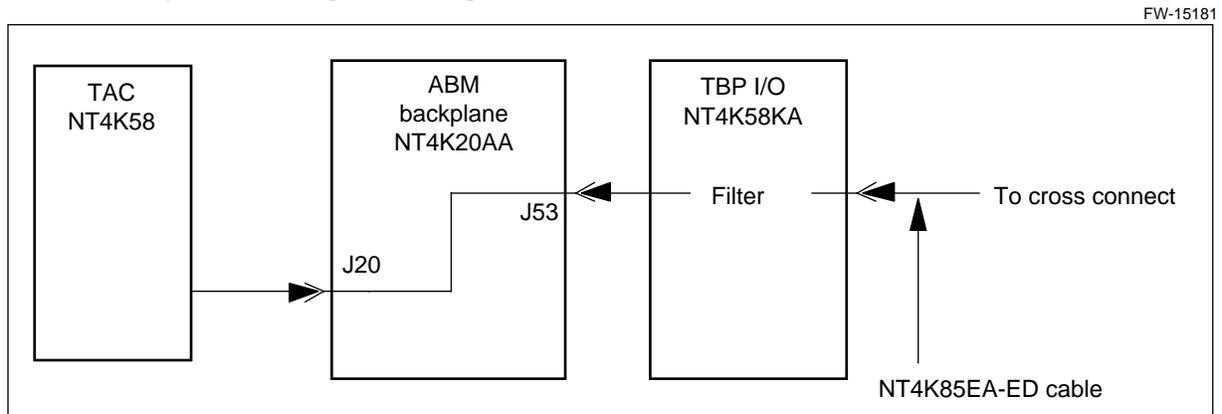


Test access pair I/O

The test access pair (TAP) I/O filter card (NT4K58KA), mounted in position 53 of the ABM I/O section, connects to customer defined CDS test equipment.

Figure 13-35 shows the TAP wiring block diagram.

Figure 13-35
Test access pair I/O wiring block diagram



DS1 input/output cards

The ABM shelf houses the input/output (I/O) cards for connection of DS3, DS1, access test cards for PGTC and the test bus access. Each DS1 mapper card in the ABM shelf requires two I/O shelf positions: one for a DS1 input card and one for a DS1 output card.

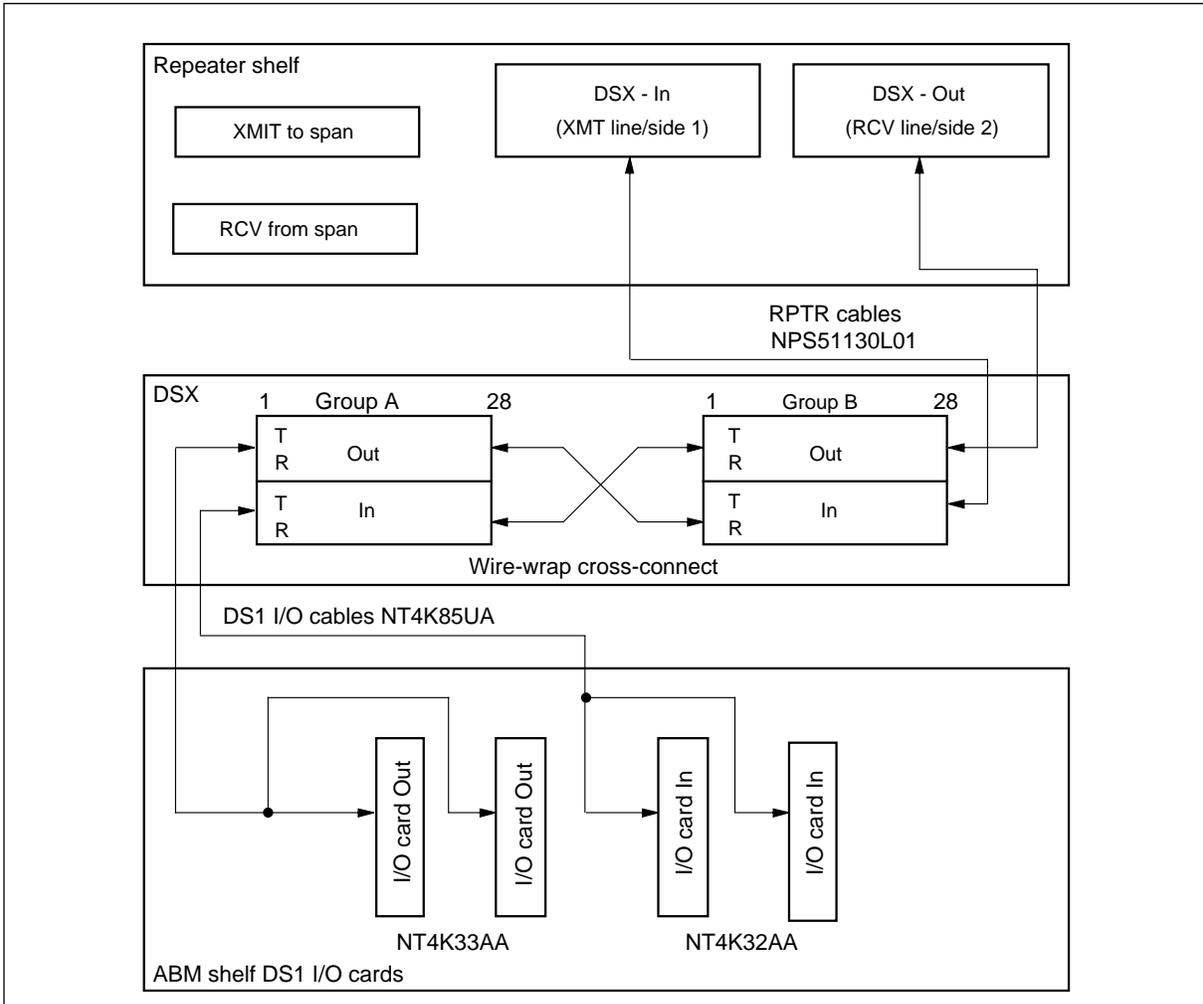
The DS1 protection mapper card requires a DS1 protection bridge card to be placed in the I/O shelf.

The dual power filter cards are mounted in the far right-hand end of the shelf for connection to the BIP. See Figure 13-19 on page 13-29 for the wiring connection location to the BIP.

The DS1 input I/O card connection wiring diagram is shown in Figure 13-36.

Figure 13-36
ABM I/O card cabling block diagram

FW-15194



DS1 I/O card wiring

DS1 I/O wiring tables are listed in the next section for DSX to repeater wiring (see Table 13-12 on page 13-54 through Table 13-15 on page 13-60).

DS1 I/O input cards connect to connectors J30, J31, J34, J35, J38, J39, J42 and J43 on the ABM backplane (see Figure 13-37 on page 13-52).

DS1 I/O output cards connect to connectors J32, J33, J36, J37, J40, J41, J44 and J45 on the ABM backplane (see Figure 13-37 on page 13-52).

DSX and repeater cabling

The DSX panel, when installed, interfaces the DS1 I/O cards of the ABM shelf to the repeater shelf. Reference Figure 13-36 on page 13-50 for the block diagram of the DS1 I/O to DSX to repeater cabling.

DSX wiring tables

Table 13-12 on page 13-54, Table 13-13 on page 13-56, Table 13-14 on page 13-58, and Table 13-15 on page 13-60 show the wiring connections from the DS1 I/O cards to the DSX panel to the repeater shelf.

The signal names listed in the tables are defined in the following chart:

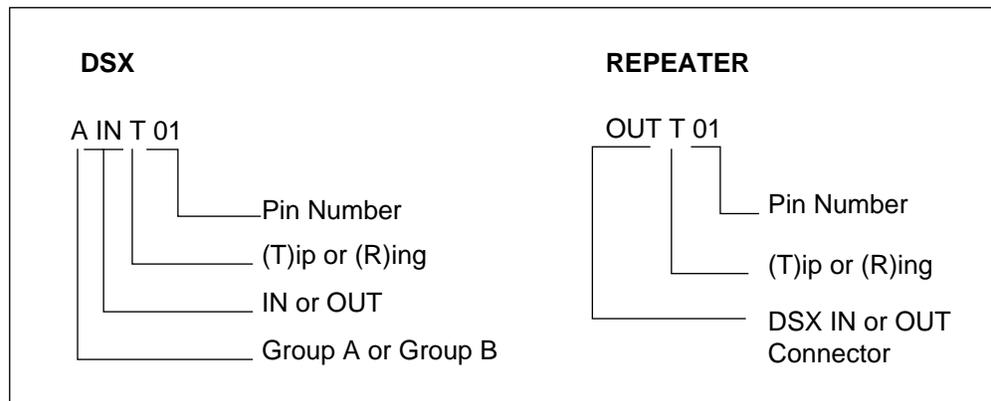
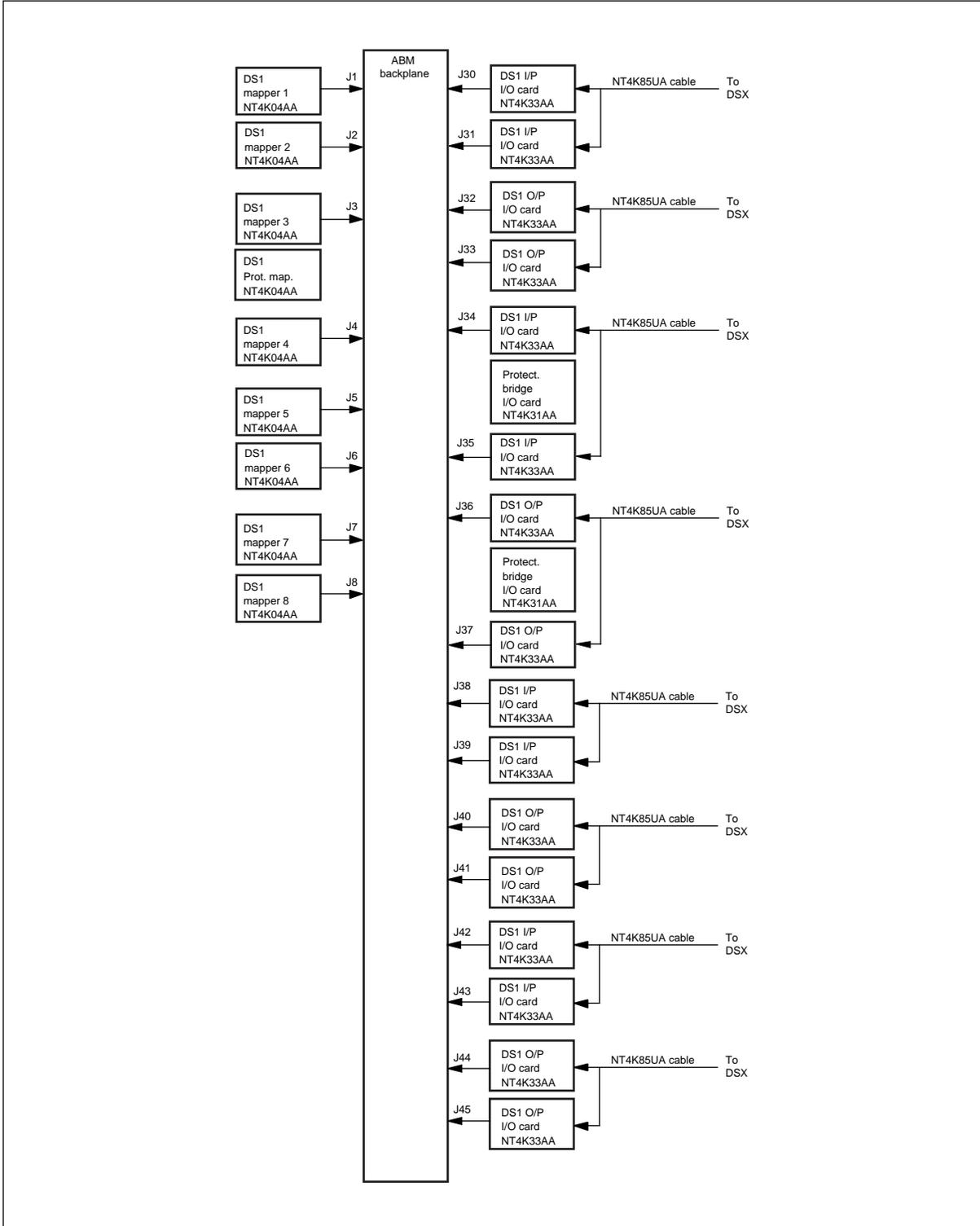


Figure 13-37
ABM DSX I/O card wiring block diagram

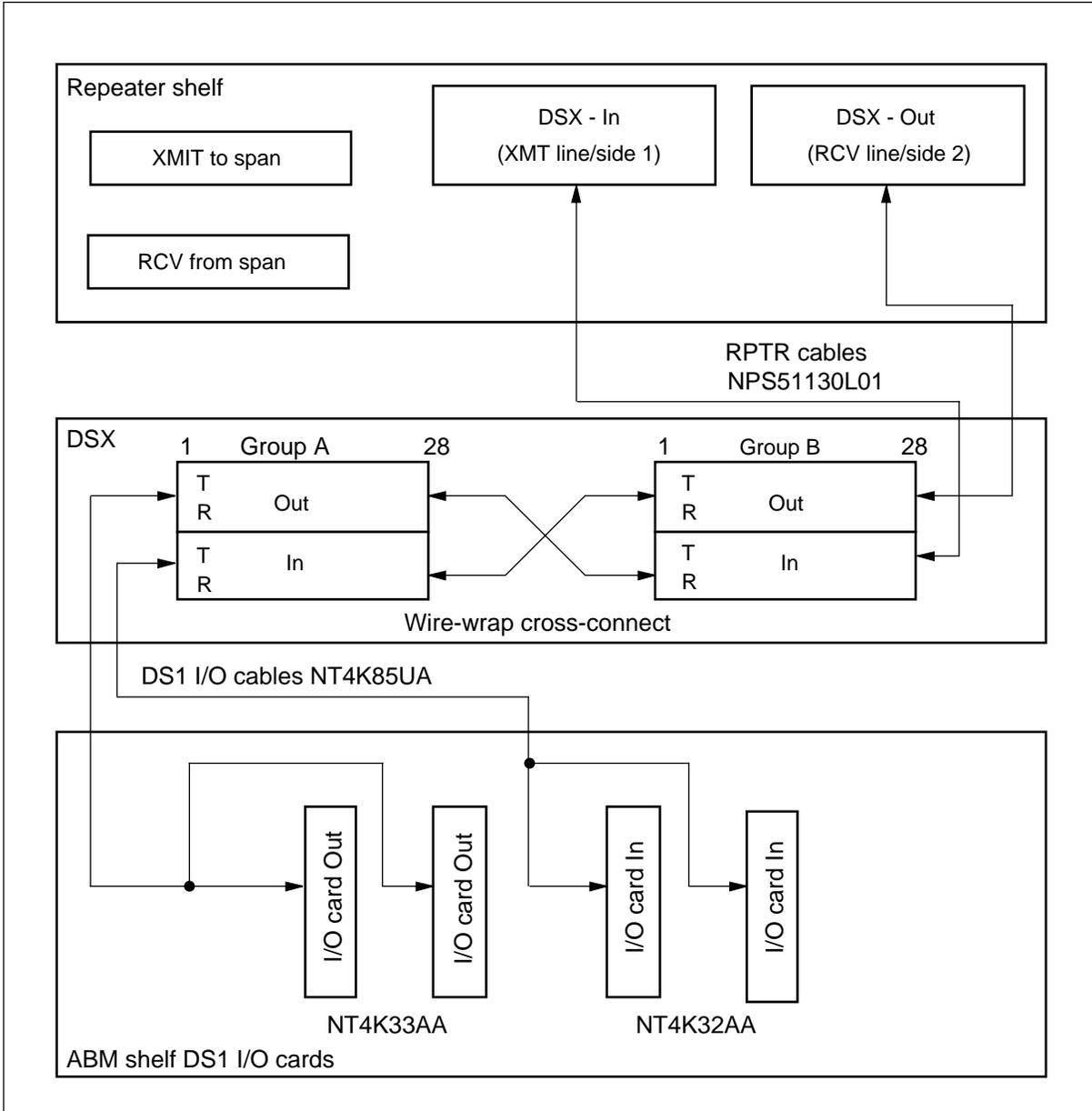
FW-15180



The DS1 Input I/O card connection wiring diagram is shown in Figure 13-38.

Figure 13-38
DSX and repeater cabling block diagram

FW-15194



13-54 Cabinet and equipment wiring and cabling

Table 13-12 shows the wiring tables for the DS1 IN to RPTR OUT wiring for card 1.

Table 13-12
DS1 IN - repeater OUT connections (I/O card 1)

Signal type	Signal name	DS1 Input cable		DSX IN-OUT cross-connect		Repeater DSX cable		
		Cable pin#	Color	Signal name	Signal name	Signal name.	Cable pin#	Color
DS1-1 I/P working	DTW01+(T)	16	W-BL	AIN01	BOU01	OUT01	33	W-BL
	DTW01- (R)	31	BL-W	AINR01	BOUR01	OUR01	1	BL-W
DS1-2 I/P working	DTW02+(T)	17	W-O	AIN02	BOU02	OUT02	34	W-O
	DTW02- (R)	32	O-W	AINR02	BOUR02	OUR02	2	O-W
DS1-3 I/P working	DTW03+(T)	18	W-G	AIN03	BOU03	OUT03	35	W-G
	DTW03- (R)	33	G-W	AINR03	BOUR03	OUR03	3	G-W
DS1-4 I/P working	DTW04+(T)	19	W-BR	AIN04	BOU04	OUT04	36	W-BR
	DTW04- (R)	34	BR-W	AINR04	BOUR04	OUR04	4	BR-W
DS1-5 I/P working	DTW05+(T)	20	W-S	AIN05	BOU05	OUT05	37	W-S
	DTW05- (R)	35	S-W	AINR05	BOUR05	OUR05	5	S-W
DS1-6 I/P working	DTW06+(T)	21	R-BL	AIN06	BOU06	OUT06	38	R-BL
	DTW06- (R)	36	BL-R	AINR06	BOUR06	OUR06	6	BL-R
DS1-7 I/P working	DTW07+(T)	22	R-O	AIN07	BOU07	OUT07	39	R-O
	DTW07- (R)	37	O-R	AINR07	BOUR07	OUR07	7	O-R
DS1-8 I/P working	DTW08+(T)	23	R-G	AIN08	BOU08	OUT08	40	R-G
	DTW08- (R)	38	G-R	AINR08	BOUR08	OUR08	8	G-R
DS1-9 I/P working	DTW09+(T)	24	R-BR	AIN09	BOU09	OUT09	41	R-BR
	DTW09- (R)	39	BR-R	AINR09	BOUR09	OUR09	9	BR-R
DS1-10 I/P working	DTW10+(T)	25	R-S	AIN10	BOU10	OUT10	42	R-S
	DTW10- (R)	40	S-R	AINR10	BOUR10	OUR10	10	S-R
—continued—								

Table 13-12 (continued)
DS1 IN - repeater OUT connections (I/O card 1)

Signal type	Signal name	DS1 Input cable		DSX IN-OUT cross-connect		Repeater DSX cable		
		Cable pin#	Color	Signal name	Signal name	Signal name.	Cable pin#	Color
DS1-11 I/P working	DTW11+(T)	26	BK-BL	AIN11	BOUTT11	OUTT11	43	BK-BL
	DTW11- (R)	41	BL-BK	AINR11	BOUTR11	OUTR11	11	BL-BK
DS1-12 I/P working	DTW12+(T)	27	BK-O	AIN12	BOUTT12	OUTT12	44	BK-O
	DTW12- (R)	42	O-BK	AINR12	BOUTR12	OUTR12	12	O-BK
DS1-13 I/P working	DTW13+(T)	28	BK-G	AIN13	BOUTT13	OUTT13	45	BK-G
	DTW13- (R)	43	G-BK	AINR13	BOUTR13	OUTR13	13	G-BK
DS1-14 I/P working	DTW14+(T)	29	BK-BR	AIN14	BOUTT14	OUTT14	46	BK-BR
	DTW14- (R)	44	BR-BK	AINR14	BOUTR14	OUTR14	14	BR-BK
—end—								

Table 13-13 shows the wiring tables for the DS1 IN to RPTR OUT wiring for card 2.

Table 13-13
DS1 IN - repeater OUT connections (I/O card 2)

Signal type	Signal name	DS1 Input cable		DSX IN-OUT cross-connect		Repeater DSX cable		
		Cable pin#	Color	Signal name	Signal name	Signal name	Cable pin#	Color
DS1-1 I/P working	DTW01+(T)	16	BK-S	AIN15	BOUTT15	OUTT01	47 P	BK-S
	DTW01- (R)	31	S-BK	AINR15	BOU15	OUTR01	15	S-BK
DS1-2 I/P working	DTW02+(T)	17	Y-BL	AIN16	BOUTT16	OUTT02	48 P	Y-BL
	DTW02- (R)	32	BL-Y	AINR16	BOU16	OUTR02	16	BL-Y
DS1-3 I/P working	DTW03+(T)	18	Y-O	AIN17	BOUTT17	OUTT03	49 P	Y-O
	DTW03- (R)	33	O-Y	AINR17	BOU17	OUTR03	17	O-Y
DS1-4 I/P working	DTW04+(T)	19	Y-G	AIN18	BOUTT18	OUTT04	50 P	Y-G
	DTW04- (R)	34	G-Y	AINR18	BOU18	OUTR04	18	G-Y
DS1-5 I/P working	DTW05+(T)	20	Y-BR	AIN19	BOUTT19	OUTT05	51 P	Y-BR
	DTW05- (R)	35	BR-Y	AINR19	BOU19	OUTR05	19	BR-Y
DS1-6 I/P working	DTW06+(T)	21	Y-S	AIN20	BOUTT20	OUTT06	52 P	Y-S
	DTW06- (R)	36	S-Y	AINR20	BOU20	OUTR06	20	S-Y
DS1-7 I/P working	DTW07+(T)	22	V-BL	AIN21	BOUTT21	OUTT07	53 P	V-BL
	DTW07- (R)	37	BL-V	AINR21	BOU21	OUTR07	21	BL-V
DS1-8 I/P working	DTW08+(T)	23	V-O	AIN22	BOUTT22	OUTT08	54 P	V-O
	DTW08- (R)	38	O-V	AINR22	BOU22	OUTR08	22	O-V
DS1-9 I/P working	DTW09+(T)	24	V-G	AIN23	BOUTT23	OUTT09	55 P	V-G
	DTW09- (R)	39	G-V	AINR23	BOU23	OUTR09	23	G-V
DS1-10 I/P working	DTW10+(T)	25	V-BR	AIN24	BOUTT24	OUTT10	56 P	V-BR
	DTW10- (R)	40	BR-V	AINR24	BOU24	OUTR10	24	BR-V
—continued—								

Table 13-13 (continued)
DS1 IN - repeater OUT connections (I/O card 2)

Signal type	Signal name	DS1 Input cable		DSX IN-OUT cross-connect		Repeater DSX cable		
		Cable pin#	Color	Signal name	Signal name	Signal name	Cable pin#	Color
DS1-11 I/P working	DTW11+(T)	26	V-S	AINT25	BOUTT25	OUTT11	57 P	V-S
	DTW11- (R)	41	S-V	AINR25	BOUTR25	OUTR11	25	S-V
DS1-12 I/P working	DTW12+(T)	27	W-BL	AINT26	BOUTT26	OUTT12	58 P	W-BL
	DTW12- (R)	42	BL-W	AINR26	BOUTR26	OUTR12	26	BL-W
DS1-13 I/P working	DTW13+(T)	28	W-O	AINT27	BOUTT27	OUTT13	59 P	W-O
	DTW13- (R)	43	O-W	AINR27	BOUTR27	OUTR13	27	O-W
DS1-14 I/P working	DTW14- (T)	29	W-G	AINR28	BOUTR28	OUTR14	60	W-G
	DTW14- (R)	44	G-W	AINR28	BOUTR28	OUTR14	28	G-W
—end—								

Table 13-14 shows the wiring tables for the DS1 OUT to RPTR IN wiring for card 1.

Table 13-14
DS1 OUT - repeater IN connections (I/O card 1)

Signal type	Signal name	DS1 Output cable		DSX IN-OUT cross-connect		Repeater DSX cable		
		Cable pin#	Color	Signal name	Signal name	Signal name	Cable pin#	Color
DS1-1 O/P working	DRW01+(T)	16	W-BL	AOUTT01	BINT01	INT01	33 P	W-BL
	DRW01- (R)	31	BL-W	AOUTR01	BINR01	INR01	1	BL-W
DS1-2 O/P working	DRW02+(T)	17	W-O	AOUTT02	BINT02	INT02	34 P	W-O
	DRW02- (R)	32	O-W	AOUTR02	BINR02	INR02	2	O-W
DS1-3 O/P working	DRW03+(T)	18	W-G	AOUTT03	BINT03	INT03	35 P	W-G
	DRW03- (R)	33	G-W	AOUTR03	BINR03	INR03	3	G-W
DS1-4 O/P working	DRW04+(T)	19	W-BR	AOUTT04	BINT04	INT04	36 P	W-BR
	DRW04- (R)	34	BR-W	AOUTR04	BINR04	INR04	4	BR-W
DS1-5 O/P working	DRW05+(T)	20	W-S	AOUTT05	BINT05	INT05	37 P	W-S
	DRW05- (R)	35	S-W	AOUTR05	BINR05	INR05	5	S-W
DS1-6 O/P working	DRW06+(T)	21	R-BL	AOUTT06	BINT06	INT06	38 P	R-BL
	DRW06- (R)	36	BL-R	AOUTR06	BINR06	INR06	6	BL-R
DS1-7 O/P working	DRW07+(T)	22	R-O	AOUTT07	BINT07	INT07	39 P	R-O
	DRW07- (R)	37	O-R	AOUTR07	BINR07	INR07	7	O-R
DS1-8 O/P working	DRW08+(T)	23	R-G	AOUTT08	BINT08	INT08	40 P	R-G
	DRW08- (R)	38	G-R	AOUTR08	BINR08	INR08	8	G-R
DS1-9 O/P working	DRW09+(T)	24	R-BR	AOUTT09	BINT09	INT09	41 P	R-BR
	DRW09- (R)	39	BR-R	AOUTR09	BINR09	INR09	9	BR-R
DS1-10 O/P working	DRW10+(T)	25	R-S	AOUTT10	BINT10	INT10	42 P	R-S
	DRW10- (R)	40	S-R	AOUTR10	BINR10	INR10	10	S-R
—continued—								

Table 13-14 (continued)
DS1 OUT - repeater IN connections (I/O card 1)

Signal type	Signal name	DS1 Output cable		DSX IN-OUT cross-connect		Repeater DSX cable		
		Cable pin#	Color	Signal name	Signal name	Signal name	Cable pin#	Color
DS1-11 O/P working	DRW11+(T)	26	BK-BL	AOUTT11	BINT11	INT11	43 P	BK-BL
	DRW11- (R)	41	BL-BK	AOUTR11	BINR11	INR11	11	BL-BK
DS1-12 O/P working	DRW12+(T)	27	BK-O	AOUTT12	BINT12	INT12	44 P	BK-O
	DRW12- (R)	42	O-BK	AOUTR12	BINR12	INR12	12	O-BK
DS1-13 O/P working	DRW13+(T)	28	BK-G	AOUTT13	BINT13	INT13	45 P	BK-G
	DRW13-	43	G-BK	AOUTR13	BINR13	INR13	13	G-BK
DS1-14 O/P working	DRW14+(T)	29	BK-BR	AOUTT14	BINT14	INT14	46 P	BK-BR
	DRW14-	44	BR-BK	AOUTR14	BINR14	INR14	14	BR-BK
—end—								

Table 13-15 shows the wiring tables for the DS1 OUT to RPTR IN wiring for card 2.

Table 13-15
DS1 OUT - repeater IN connections (I/O card 2)

Signal type	Signal name	DS1 Output cable		DSX IN-OUT cross-connect		Repeater DSX cable		
		Cable pin#	Color	Signal name	Signal name	Signal name	Cable pin#	Color
DS1-1 O/P working	DRW01+(T)	16	W-BL	AOUTT01	BINT01	INT01	47 P	BK-S
	DRW01- (R)	31	BL-W	AOUTR01	BINR01	INR01	15	S-BK
DS1-2 O/P working	DRW02+(T)	17	W-O	AOUTT02	BINT02	INT02	48 P	Y-BL
	DRW02- (R)	32	O-W	AOUTR02	BINR02	INR02	16	BL-Y
DS1-3 O/P working	DRW03+(T)	18	W-G	AOUTT03	BINT03	INT03	49 P	Y-O
	DRW03- (R)	33	G-W	AOUTR03	BINR03	INR03	17	O-Y
DS1-4 O/P working	DRW04+(T)	19	W-BR	AOUTT04	BINT04	INT04	50 P	Y-G
	DRW04- (R)	34	BR-W	AOUTR04	BINR04	INR04	18	G-Y
DS1-5 O/P working	DRW05+(T)	20	W-S	AOUTT05	BINT05	INT05	51 P	Y-BR
	DRW05- (R)	35	S-W	AOUTR05	BINR05	INR05	19	BR-Y
DS1-6 O/P working	DRW06+(T)	21	R-BL	AOUTT06	BINT06	INT06	52 P	Y-S
	DRW06- (R)	36	BL-R	AOUTR06	BINR06	INR06	20	S-Y
DS1-7 O/P working	DRW07+(T)	22	R-O	AOUTT07	BINT07	INT07	53 P	V-BL
	DRW07- (R)	37	O-R	AOUTR07	BINR07	INR07	21	BL-V
DS1-8 O/P working	DRW08+(T)	23	R-G	AOUTT08	BINT08	INT08	54 P	V-O
	DRW08- (R)	38	G-R	AOUTR08	BINR08	INR08	22	O-V
DS1-9 O/P working	DRW09+(T)	24	R-BR	AOUTT09	BINT09	INT09	55 P	V-G
	DRW09- (R)	39	BR-R	AOUTR09	BINR09	INR09	23	G-V
DS1-10 O/P working	DRW10+(T)	25	R-S	AOUTT10	BINT10	INT10	56 P	V-BR
	DRW10- (R)	40	S-R	AOUTR10	BINR10	INR10	24	BR-V
—continued—								

Table 13-15 (continued)
DS1 OUT - repeater IN connections (I/O card 2)

Signal type	Signal name	DS1 Output cable		DSX IN-OUT cross-connect		Repeater DSX cable		
		Cable pin#	Color	Signal name	Signal name	Signal name	Cable pin#	Color
DS1-11 O/P working	DRW11+(T)	26	BK-BL	AOUTT11	BINT11	INT11	57 P	V-S
	DRW11- (R)	41	BL-BK	AOUTR11	BINR11	INR11	25	S-V
DS1-12 O/P working	DRW12+(T)	27	BK-O	AOUTT12	BINT12	INT12	58 P	W-BL
	DRW12- (R)	42	O-BK	AOUTR12	BINR12	INR12	26	BL-W
DS1-13 O/P working	DRW13+(T)	28	BK-G	AOUTT13	BINT13	INT13	59 P	W-O
	DRW13-	43	G-BK	AOUTR13	BINR13	INR13	27	O-W
DS1-14 O/P working	DRW14+(T)	29	BK-BR	AOUTT14	BINT14	INT14	60 P	W-G
	DRW14-	44	BR-BK	AOUTR14	BINR14	INR14	28	G-W
—end—								

Copper-distribution shelf cabling

CDS cabling to the ABM shelf is detailed in the ABM section of this chapter.

- Metallic test access (MTA) cabling — Figure 13-23 on page 13-36
- A/B link cabling — Figure 13-33 on page 13-48

CDS cabling to the BIP shelf is detailed in the BIP section of this chapter.

- CDS power — Figure 13-19 on page 13-29
- CDS talk battery — Figure 13-20 on page 13-30

Service protection center VF cabling

The CDS has four 25-pair connectors for line card T/R pair connection to the VF protector blocks in the termination compartment. The connectors for VF pairs 1 to 50 are located on the left-hand side of the CDS and the connectors for VF pairs 51 to 96 are located on the right-hand side of the CDS. The connectorized CDS cabling routes to the equipment side of the connectorized VF blocks.

The CDS has the capacity to provide up to 96 lines of VF service. VF cable pairs 97-100 are spare cable pairs in the second connector of the right-hand side CDS.

Your cabinet may be equipped with either the NT4K12AA CDS or the NT4K12AB CDS.

Figure 13-39 on page 13-63 shows the NT4K12AA CDS shelf connectors on both the left and right sides for VF connection to the SPC. Figure 13-40 shows the NT4K12AB CDS shelf connectors on both the left and right sides for VF connection to the SPC. The figures show the VF line numbers for CDS 1. CDS 2-7 are numbered sequentially up to VF line count 672.

Each CDS is cabled to a VF protector block in the termination compartment.

The NT4K12AA CDS is cabled to the VF protector blocks with VF cables NT4K87BD (CDSs 1-5), NT4K87BE (CDS 6) and NT4K87BF (CDS 7).

The NT4K12AB CDS is cabled to the VF protector blocks with VF cables NT4K87BG (CDSs 1-5), NT4K87BH (CDS 6) and NT4K87BJ (CDS 7).

Figure 13-41 on page 13-65 shows the cabling connections from the CDS shelves to the SPC VF protector blocks and to the cross-connect blocks (BIX option shown).

Figure 13-42 on page 13-66 shows the cable routing from the CDS shelves to the SPC VF protector blocks.

Figure 13-39
CDS connector fields (NT4K12AA shelf)

FW-15172

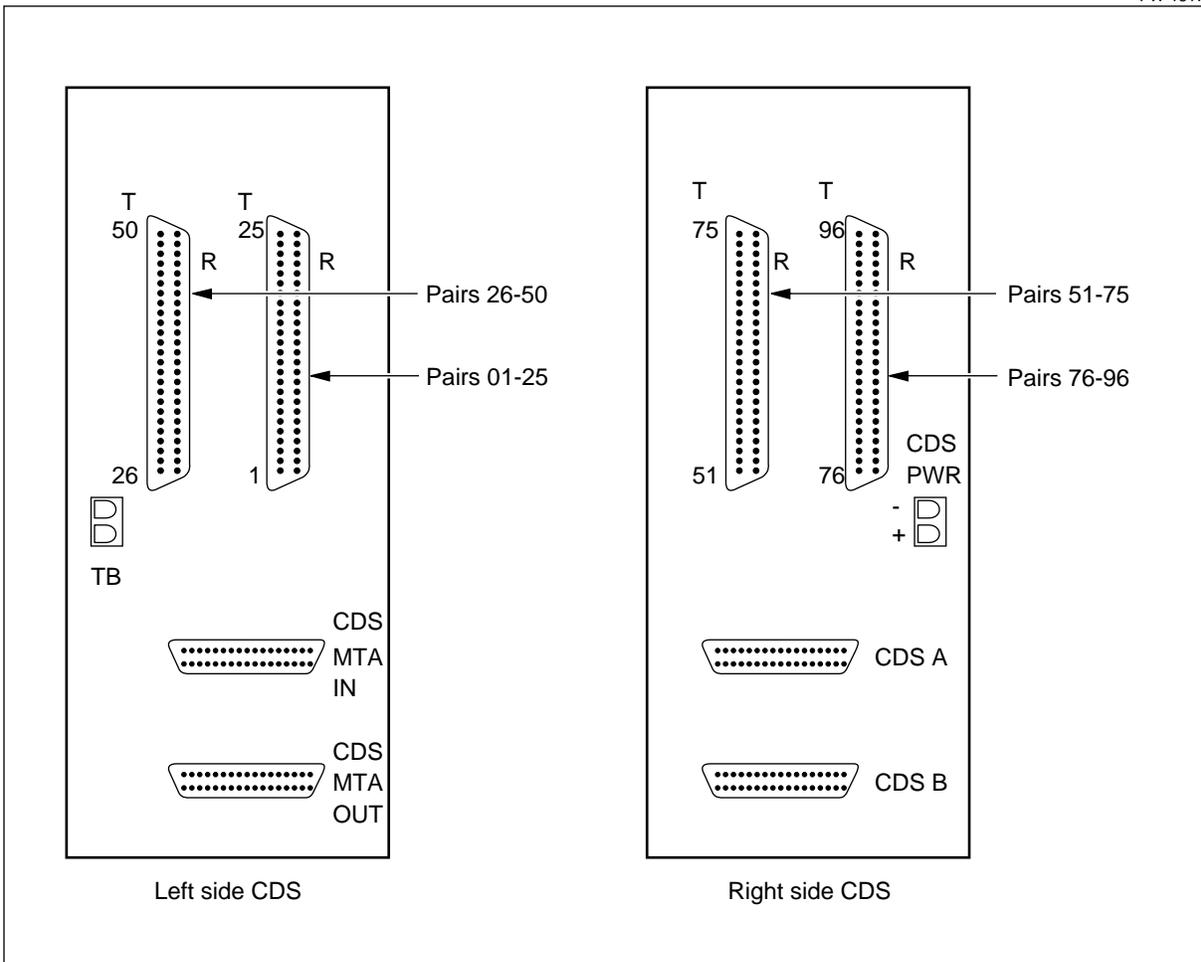


Figure 13-40
CDS connector fields (NT4K12AB shelf)

FW-15173

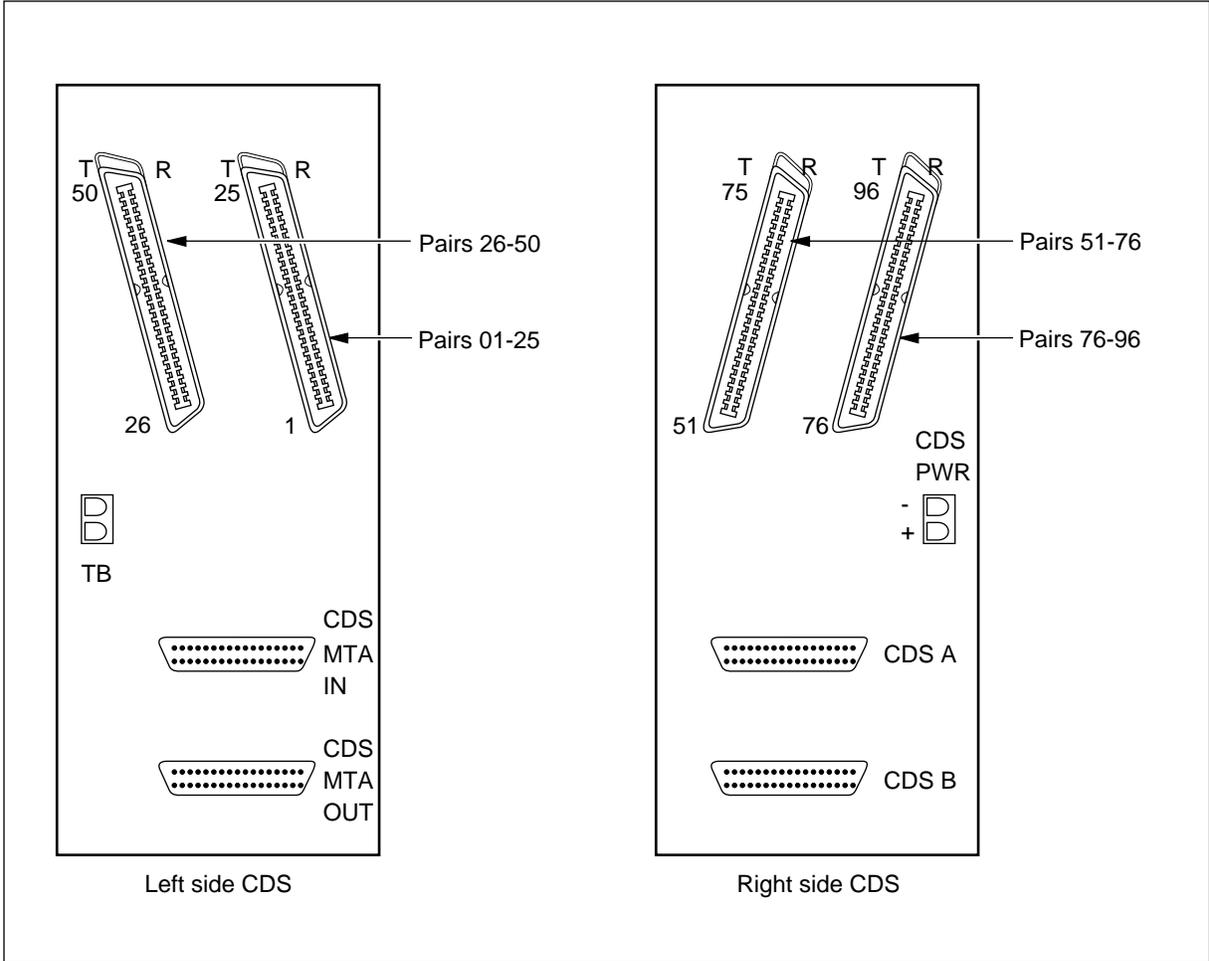
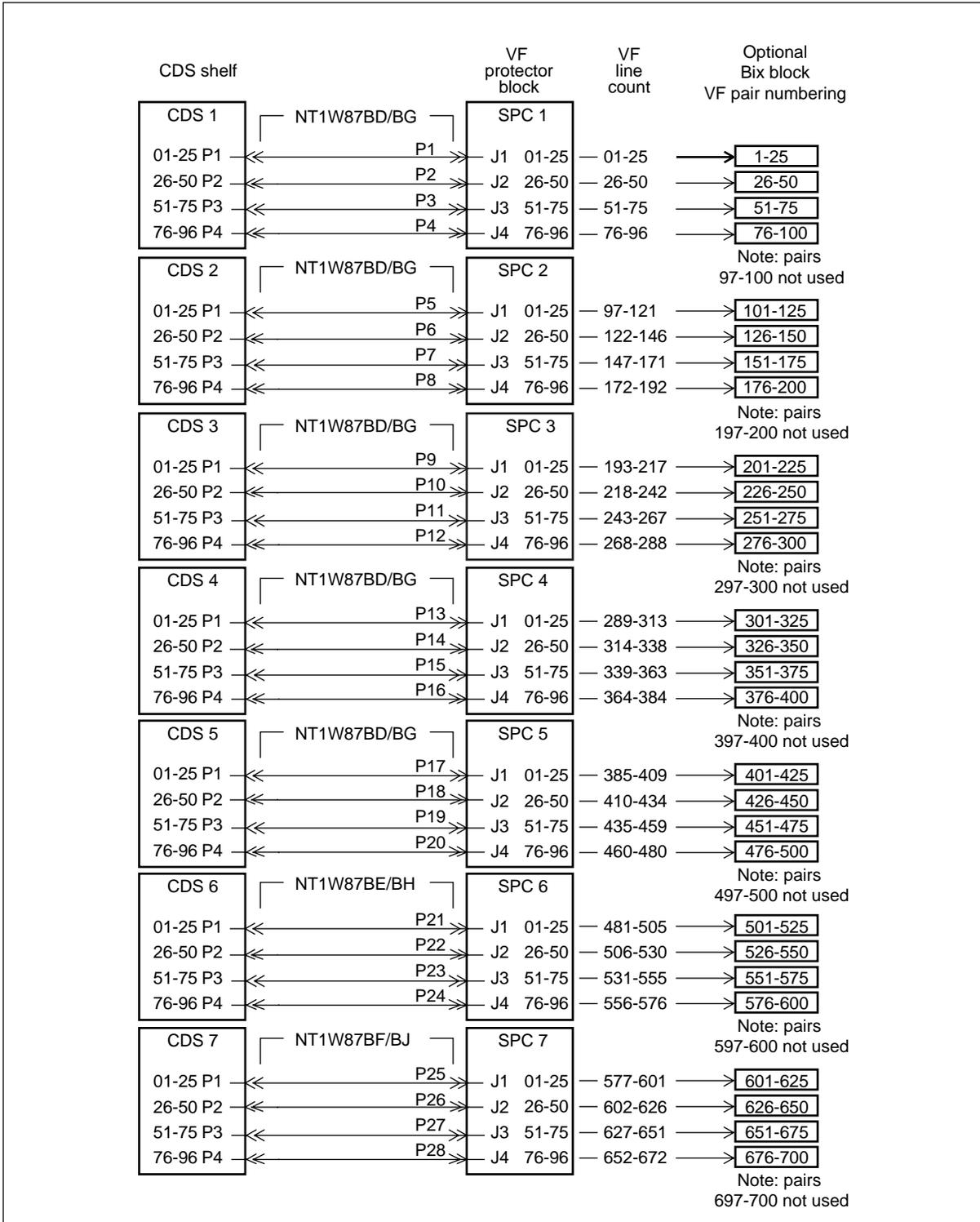


Figure 13-41
CDS VF line connection to SPC

FW-15294



Service protection center protector block wiring

The service protection center VF protector blocks are connectorized for the VF line feeds from the CDS shelves (see Figure 13-41 on page 13-65, Figure 13-42 on page 13-66 and Figure 13-43 on page 13-68).

The equipment side connections from the CDS shelves are internally wired to the equipment side of the protector plug position (see Figure 13-44 on page 13-69).

The last four pairs (22–25) in the VF cable from CDS VF connector 76–96 are not used. Protector block positions 97-100 are unused in S800A applications.

The line or outside plant side of the VF protector block is connectorized with the optional BIX or 710 type connectors or with 3M screw-down cross-connect terminal blocks mounted on the SAI swing frame.

Figure 13-43 on page 13-68 shows the VF protector block connector layout.

Figure 13-44 on page 13-69 shows the VF protector block pin configuration and layout.

Figure 13-43
VF protector block connector layout

FW-15178

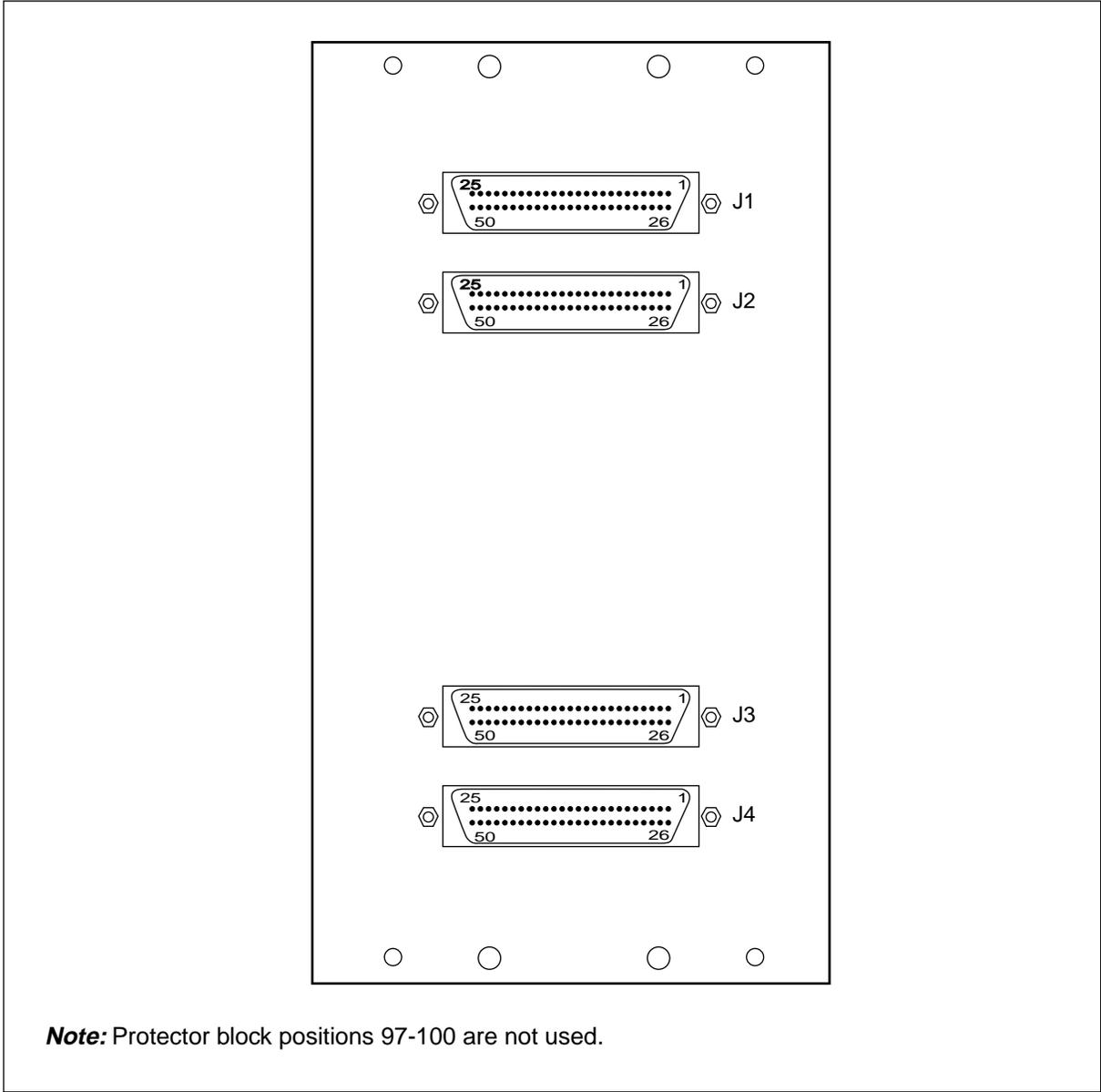
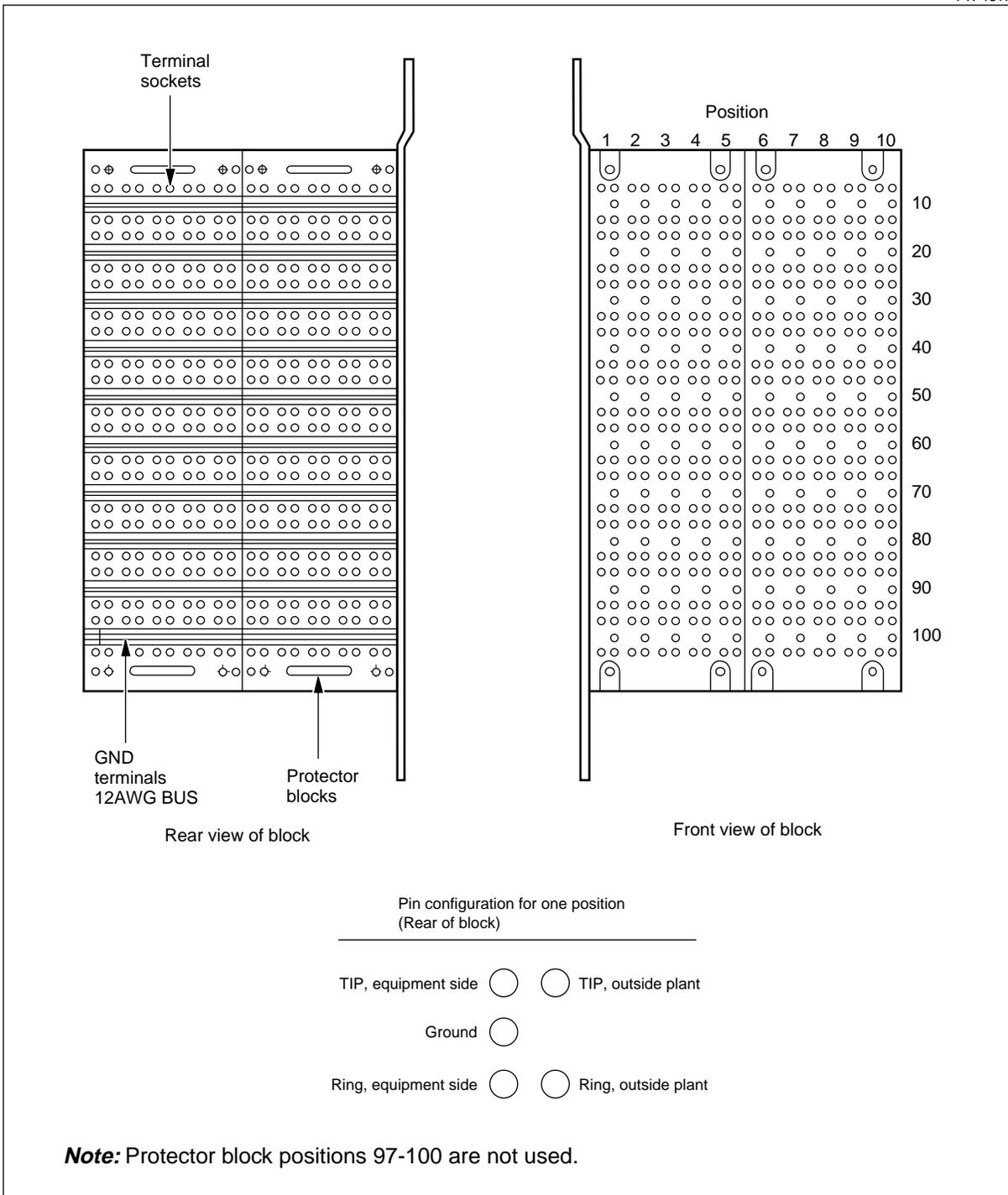


Figure 13-44
VF protector block pin configuration and layout

FW-15179



Wiring tables

The following wiring tables are provided to enable you to quickly and easily trace equipment or cabinet wiring and cabling throughout the entire S800A cabinet.

Use these tables either during the initial turn-up of the cabinet and equipment or when wiring or cabling errors are suspected.

Table 13-16 shows the wiring tables that follow.

Table 13-16
Wiring tables

If you want wiring information for the	Then go to page
ABM	page 13-71
BIP alarm and power	page 13-73
Miscellaneous	page 13-76
SPC/CDS VF	page 13-77
Repeater shelf	page 13-79
Metallic test pair	page 13-80
AC/DC Power	page 13-81

Table 13-17 shows the ABM cabling and wiring for the S800A cabinet.

Table 13-17
ABM cabling and wiring

From Location	Terminal	Identification	To Location	Terminal
VD &T Link (side interconnect right)				
ABM	CDS 1A (J01)	NT1W82DC	CDS 1	CDS A
ABM	CDS 1B (J02)	NT1W82DC	CDS 1	CDS B
ABM	CDS 2A (J03)	NT1W82DD	CDS 2	CDS A
ABM	CDS 2B (J04)	NT1W82DD	CDS 2	CDS B
ABM	CDS 3A (J05)	NT1W82DE	CDS 3	CDS A
ABM	CDS 3B (J06)	NT1W82DE	CDS 3	CDS B
ABM	CDS 4A (J07)	NT1W82DF	CDS 4	CDS A
ABM	CDS 4B (J08)	NT1W82DF	CDS 4	CDS B
ABM	CDS 5A (J09)	NT1W82DG	CDS 5	CDS A
ABM	CDS 5B (J10)	NT1W82DG	CDS 5	CDS B
ABM	CDS 6A (J11)	NT4K82DB	CDS 6	CDS A
ABM	CDS 6B (J12)	NT4K82DB	CDS 6	CDS B
ABM	CDS 7A (J13)	NT4K82DA	CDS 7	CDS A
ABM	CDS 7B (J14)	NT4K82DA	CDS 7	CDS B
Miscellaneous (side interconnect left)				
ABM	CDS MTA (J01)	MTA (NT1W86NB)	CDS 1	MTA (IN)
ABM	LCAP 2 (J02)	LCAP	p/o LCAP shelf	
ABM	LCAP 1 (J03)	LCAP	p/o LCAP shelf	
ABM	OW EXT. (J04)	Orderwire Extension (NT1W85TA)	VF cross-connect	Customer assigned
ABM	CU IF (J05/T1)	High Temp return (NT1W82FA)	High Temp sensor	
ABM	CU IF (J05/T2)	High Temp (NT1W82FA)	High Temp sensor	
ABM	CU IF (J05/O1W)	Fan alarm return (NT1W82FA)	BBP	FAN Pin 2
—continued—				

Table 13-17 (continued)
ABM cabling and wiring

From Location	Terminal	Identification	To Location	Terminal
ABM	CU IF (J05/BL1W)	Fan alarm (NT1W82FA)	BBP	FAN Pin 3
ABM	Modem (J08)	Modem (NT4K86RA)	External modem	
ABM (SIL)	Parallel telemetry (J11)	External alarms (NT1W82FB)	DC distribution shelf	
ABM (SIL)	BIP CTL (J13)	BIP CTL (NT1W85AA)	BIP	CE-1 (J1)
ABM (SIL)	I/O card		RPTR 1	NT4K85UA
ABM (SIL)	I/O card		RPTR 2	NT4K85UA
—end—				

Table 13-18 shows the BIP alarm and power cabling and wiring for the S800A cabinet.

Table 13-18
BIP alarm and power cabling and wiring

From Location	Terminal	Identification	To Location	Terminal
Alarm cabling on the pin field				
BIP Pin field	7 (R05)	LOW TEMP	Low Temp sensor	G1W
BIP Pin field	8 (RRET)	LOW TEMP RET	Low Temp sensor	BR1W
BIP Pin field	8 (RRET)	FA RET	BBP	Pin 2 PWR
BIP Pin field	9 (R06)	FA	BBP	Pin 3 PWR
BIP Pin field	11 (RRET)	RPTR FA RET	RPTR 1	Pin 16 BL1RED
BIP Pin field	11 (RRET)	RPTR LOS RET	RPTR 1	Pin 10 G1RED
BIP Pin field	13 (R09)	RPTR FA	RPTR 1	Pin 14 SL1W
BIP Pin field	13 (R09)	RPTR FA	RPTR 2	Pin 14 BL1BK
BIP Pin field	14 (RRET)	RPTR ERR RET	RPTR 1	Pin 4 SL1RED
BIP Pin field	14 (RRET)	RPTR FA RET	RPTR 2	Pin 16 O1BK
BIP Pin field	15 (R10)	RPTR LOS	RPTR 1	Pin 8 O1RED
BIP Pin field	15 (R10)	RPTR LOS	RPTR 2	Pin 8 G1BK
BIP Pin field	16 (R11)	RPTR ERR	RPTR 1	Pin 2 BR1RED
BIP Pin field	16 (R11)	RPTR ERR	RPTR 2	Pin 2 SL1BK
BIP Pin field	17 (RRET)	RPTR LOS RET	RPTR 2	Pin 10 BR1BK
BIP Pin field	17 (RRET)	RPTR ERR RET	RPTR 2	Pin 4 BL1Y
—continued—				

Table 13-18 (continued)
BIP alarm and power cabling and wiring

From Location	Terminal	Identification	To Location	Terminal
Miscellaneous cabling				
BIP	CTRL CE 1	NT1W85AA	ABM	BIP CTL (J13)
Power cabling				
BIP	Batt1/Ret1	-48V (NT1W87DA)	DC distribution shelf	BIP -48V (BR1)
BIP	Batt2/Ret2	-48V (NT1W87DA)	DC distribution shelf	BIP -48V (BR2)
BIP	Batt3/Ret3	-48V (NT1W87DA)	DC distribution shelf	BIP -48V (BR3)
BIP	Batt4/Ret3	-48V (NT1W87DA)	DC distribution shelf	BIP -48V (BR4)
BIP	CDS TB1	CDS 1 power left side (NT1W84AB)	CDS 1	TB
BIP	CDS TB2	CDS 2 power left side (NT1W84AB)	CDS 2	TB
BIP	CDS TB3	CDS 3 power left side (NT1W84AB)	CDS 3	TB
BIP	CDS TB4	CDS 4 power left side (NT1W84AB)	CDS 4	TB
BIP	CDS TB5	CDS 4 power left side (NT1W84AB)	CDS 5	TB
BIP	CDS TB6	CDS 6 power left side (NT1W84AC)	CDS 6	TB
BIP	CDS TB7	CDS 7 power left side (NT1W84AC)	CDS 7	TB
—continued—				

Table 13-18 (continued)
BIP alarm and power cabling and wiring

From Location	Terminal	Identification	To Location	Terminal
BIP	CDS PWR1	CDS 1 power right side (NT1W84AB)	CDS 1	PWR
BIP	CDS PWR2	CDS 2 power right side (NT1W84AB)	CDS 2	PWR
BIP	CDS PWR3	CDS 3 power right side (NT1W84AB)	CDS 3	PWR
BIP	CDS PWR4	CDS 4 power right side (NT1W84AB)	CDS 4	PWR
BIP	CDS PWR5	CDS 5 power right side (NT1W84AB)	CDS 5	PWR
BIP	CDS PWR6	CDS 6 power right side (NT1W84AC)	CDS 6	PWR
BIP	CDS PWR7	CDS 7 power right side (NT1W84AC)	CDS 7	PWR
BIP	CE PWR A	ABM	CE PWR Connector	NT1W84AA
BIP	CE PWR B	ABM	CE PWR Connector	NT1W84AA
BIP	J15	CU PWR A	Roof fan group 1 Fan shelf 1	power/ret. (+/-)
BIP	J16	CU PWR B	Roof fan group 2 Fan shelf 2	power/ret. (+/-)
—end—				

Table 13-19 shows the miscellaneous cabling and wiring for the S800A cabinet.

Table 13-19
Miscellaneous cabling and wiring

From Location	Terminal	Identification	To Location	Terminal
Roof fans	Fan alarm leads	Blue wire lead	BBP	Pin 7 FAN
Fan shelf 1	Connector position 3	NT1W87AB P4.3 Fan alarm lead	BBP	Pin 9 FAN
Fan shelf 2	Connector position 3	NT1W87AB P5.3 Fan alarm lead	BBP	Pin 9 FAN
RPTR 1		ABM	I/O card	NT4K85UA
RPTR 2		ABM	I/O card	NT4K85UA
DC distribution shelf	SPG	Cabinet ground bar	Cabinet ground bar	NT1W87BB
Rectifier shelf	FG	Frame ground	Frame ground	NT4K84YB
DC distribution shelf	FG	Frame ground	Frame ground	NT4K84YB
DC distribution shelf	SPG	Cabinet ground bar	Cabinet ground bar	NT1W87BB

Table 13-20 shows the SPC to CDS VF cabling and wiring for the S800A cabinet.

The last four pairs (22–25) in the VF cable from each CDS VF connector 76–96 are not used. Protector block positions 97-100 are unused in S800A applications.

VF cables NT1W87BD, NT1W87BE and NT1W87BF are used to connect to the NT4K12AA CDS shelf. VF cables NT1W87BG, NT1W87BH and NT1W87BJ are used to connect to the NT4K12AB CDS shelf.

Table 13-20
SPC/CDS VF cabling and wiring

From Location	Terminal	Identification	To Location	Terminal	VF line number
SPC VF-1	P1	CDS 1 (NT1W87BD/BG)	SPC 1	Pairs 01–25	01–25
SPC VF-1	P2	CDS 1 (NT1W87BD/BG)	SPC 1	Pairs 26–50	26–50
SPC VF-1	P3	CDS 1 (NT1W87BD/BG)	SPC 1	Pairs 51–75	51–75
SPC VF-1	P4	CDS 1 (NT1W87BD/BG)	SPC 1	Pairs 76–96	76–96
SPC VF-2	P5	CDS 2 (NT1W87BD/BG)	SPC 2	Pairs 01–25	97–121
SPC VF-2	P6	CDS 2 (NT1W87BD/BG)	SPC 2	Pairs 26–50	122–146
SPC VF-2	P7	CDS 2 (NT1W87BD/BG)	SPC 2	Pairs 51–75	147–171
SPC VF-2	P8	CDS 2 (NT1W87BD/BG)	SPC 2	Pairs 76–96	172–192
SPC VF-3	P9	CDS 3 (NT1W87BD/BG)	SPC 3	Pairs 01–25	193–217
SPC VF-3	P10	CDS 3 (NT1W87BD/BG)	SPC 3	Pairs 26–50	218–242
SPC VF-3	P11	CDS 3 (NT1W87BD/BG)	SPC 3	Pairs 51–75	243–267
SPC VF-3	P12	CDS 3 (NT1W87BD/BG)	SPC 3	Pairs 76–96	268–288
—continued—					

Table 13-20 (continued)
SPC/CDS VF cabling and wiring

From Location	Terminal	Identification	To Location	Terminal	VF line number
SPC VF-4	P13	CDS 4 (NT1W87BD/BG)	SPC 4	Pairs 01–25	289–313
SPC VF-4	P14	CDS 4 (NT1W87BD/BG)	SPC 4	Pairs 26–50	314–338
SPC VF-4	P15	CDS 4 (NT1W87BD/BG)	SPC 4	Pairs 51–75	339–363
SPC VF-4	P16	CDS 4 (NT1W87BD/BG)	SPC 4	Pairs 76–96	364–384
SPC VF-5	P17	CDS 5 (NT1W87BD/BG)	SPC 5	Pairs 01–25	385–409
SPC VF-5	P18	CDS 5 (NT1W87BD/BG)	SPC 5	Pairs 26–50	410–444
SPC VF-5	P19	CDS 5 (NT1W87BD/BG)	SPC 5	Pairs 51–75	445–459
SPC VF-5	P20	CDS 5 (NT1W87BD/BG)	SPC 5	Pairs 76–96	460–480
SPC VF-6	P21	CDS 6 (NT1W87BE/BH)	SPC 6	Pairs 01–25	481–505
SPC VF-6	P22	CDS 6 (NT1W87BE/BH)	SPC 6	Pairs 26–50	506–530
SPC VF-6	P23	CDS 6 (NT1W87BE/BH)	SPC 6	Pairs 51–75	531–555
SPC VF-6	P24	CDS 6 (NT1W87BE/BH)	SPC 6	Pairs 76–96	556–576
SPC VF-7	P25	CDS 7 (NT1W87BF/BJ)	SPC 7	Pairs 01–25	577–601
SPC VF-7	P26	CDS 7 (NT1W87BF/BJ)	SPC 7	Pairs 26–50	602–626
SPC VF-7	P27	CDS 7 (NT1W87BF/BJ)	SPC 7	Pairs 51–75	627–651
SPC VF-7	P28	CDS 7 (NT1W87BF/BJ)	SPC 7	Pairs 76–96	652–672
—end—					

Table 13-21 shows the repeater shelf wiring and cabling for the S800A cabinet.

Table 13-21
Repeater shelf cabling and wiring

From Location	Terminal	Identification	To Location	Terminal
Repeater shelf 1				
Repeater 1	Pin 02	RPTR ERR	BIP pin field	16
Repeater 1	Pin 04	RPTR ERR RET	BIP pin field	14
Repeater 1	Pin 08	RPTR LOS	BIP pin field	10
Repeater 1	Pin 10	RPTR LOS RET	BIP pin field	11
Repeater 1	Pin 14	RPTR FA	BIP pin field	13
Repeater 1	Pin 16	RPTRFA RET	BIP pin field	11
Shelf power (right side harness)				
Repeater 2	Pin 01	-48V	BBP	CB 1 (-NEG 48V)
Repeater 2	Pin 02	RPTR ERR	BIP pin field	16
Repeater 2	Pin 03	-48V RET	BBP	POS RTN 1
Repeater 2	Pin 04	RPTR ERR RET	BIP pin field	17
Repeater 2	Pin 05	FFRM GND	Frame ground	
Repeater 2	Pin 08	RPTR LOS	BIP pin field	15
Repeater 2	Pin 10	RPTR LOS RET	BIP pin field	17
Repeater 2	Pin 14	RPTR FA	BIP pin field	13
Repeater 2	Pin 16	RPTRFA RET	BIP pin field	14
Miscellaneous power cabling				
BIP	CU A/B	NT1W87AB (W, BK) Fan group 1 (RED, BK) Fan group 2	NT7A6980/82 (W, BK) (RED, BK)	Roof fan power (+/-)
BIP	CU A/B	NT1W87AB (W, BK) (RED, BK)	Power connector Fan shelf 1 Fan shelf 2	Fan shelf power (+/-)

Table 13-22 shows the shelf metallic test pair (left side) cabling and wiring for the S800A cabinet.

Table 13-22
Shelf metallic test pair (left side) cabling and wiring

From Location	Terminal	Identification	To Location	Terminal
ABM	CDS MTA	CDS 1 (NT1W86NB)	CDS 1	MTA (IN)
CDS 1	CDS MTA (OUT)	CDS 2 (NT4K86NA)	CDS 2	MTA (IN)
CDS 2	CDS MTA (OUT)	CDS 3 (NT4K86NA)	CDS 3	MTA (IN)
CDS 3	CDS MTA (OUT)	CDS 4 (NT4K86NA)	CDS 4	MTA (IN)
CDS 4	CDS MTA (OUT)	CDS 5 (NT4K86NA)	CDS 5	MTA (IN)
CDS 5	CDS MTA (OUT)	CDS 6 (NT1W86NC)	CDS 6	MTA (IN)
CDS 6	CDS MTA (OUT)	CDS 7 (NT4K86NA)	CDS 7	MTA (IN)

Table 13-23 shows the power cabling and wiring information for the S800A cabinet.

Table 13-23
AC/DC power cabling and wiring

From Location	Terminal	Identification	To Location	Terminal
AC outlet box	Rectifier 1	Rectifier shelf	Rectifier 1	Rectifier 1
AC outlet box	Rectifier 2	Rectifier shelf	Rectifier 2	Rectifier 2
AC outlet box	Rectifier 3	Rectifier shelf	Rectifier 3	Rectifier 3
AC outlet box	EMI #1 Load (BK)	Rectifier 1	Rectifier shelf	Position 1 (L1)
AC outlet box	EMI #1 Load (RED)	Rectifier 1	Rectifier shelf	Position 1 (L2)
AC outlet box	EMI #2 Load (BK)	Rectifier 2	Rectifier shelf	Position 2 (L1)
AC outlet box	EMI #2 Load (RED)	Rectifier 2	Rectifier shelf	Position 2 (L2)
AC outlet box	EMI #3 Load (BK)	Rectifier 3	Rectifier shelf	Position 3(L1)
AC outlet box	EMI #3 Load (RED)	Rectifier 3	Rectifier shelf	Position 3 (L2)
AC outlet box	EMI #1 Load (G)		Rectifier shelf	Frame ground
AC outlet box	EMI #2 Load (G)		Rectifier shelf	Frame ground
AC outlet box	EMI #3 Load (G)		Rectifier shelf	Frame ground)
DC distribution	BIP -48V (BR1)	-48V (NT1W87DA)	BIP	Batt.1/Ret.1
DC distribution	BIP -48V (BR2)	-48V (NT1W87DA)	BIP	Batt.2/Ret.2
DC distribution	BIP -48V (BR3)	-48V (NT1W87DA)	BIP	Batt.3/Ret.3
DC distribution	BIP -48V (BR4)	-48V (NT1W87DA)	BIP	Batt.4/Ret.3
DC distribution	Batt.1	Battery 1 (NT1W84CA)	BBP	A (Bat.1)
DC distribution	Batt.2	Battery 2 (NT1W84CA)	BBP	B (Bat.2)
DC distribution	RECT (-48V)	RECT 1 -48V	Rectifier 1	-48V
DC distribution	REPEATER	DSX/RPTR 1 -48V (NT1W84DA)	Repeater 1	Pin 1 (-48 A)
BBP	B1	Repeater 2 power (NT1W84DB)	Repeater 2	Pin 1 (-48 A)

Technical support information

This section lists the technical support available for AccessNode.

Note: AccessNode Express products are serviced by the AccessNode support team detailed in this section.

24 hour emergency technical assistance

This section explains how to contact 24 hour emergency technical assistance.

If you are here...	Then call this number...
United States	(800) ASK-ETAS (800) 275-3827
Canada	(613) 226-5456

Non-emergency support and software upgrade support

This section explains how to contact non-emergency support and software upgrade support.

If you are here...	Then call this number...
United States Normal business hours 8:00 am - 5:00 pm local time Monday to Friday	(800) ASK-TRAN (800) 275-8726
All other times (for urgent software upgrade support only)	(800) ASK-ETAS (800) 275-3827
Canada Normal business hours 8:00 am - 4:00 pm local time Monday to Friday	Call your regional field service engineering group.
All other times (for urgent software upgrade support only)	(800) ASK-ETAS (800) 275-3827

Standard repair service: USA

This section explains how to contact US standard repair service.

US standard repair service consists of like-for-like replacement: a replacement circuit pack is shipped from Nortel Networks within five (5) working days after receiving the order.

Call customer service	and...	ship defective unit prepaid to...
(800) 251-1758 and request a Repair Order Number. 7:00 am - 6:00 pm CST Monday to Friday	Mark the defective item with the following: <ul style="list-style-type: none"> • assigned repair order number • explanation of the problem. 	Nortel Networks 917 Air Park Center Drive Nashville, TN 37217 Attn: Repair and Return

Standard repair service: Canada

This section explains how to contact Canadian standard repair service.

Canadian standard repair service consists of the following options:

- **Like-for-like replacement:** A replacement circuit pack is shipped from Nortel within five (5) working days after receiving the order.
- **Repair of the circuit pack:** The repaired circuit pack is shipped from Nortel within fourteen (14) days after receipt of the defective circuit pack.

Call customer service	and...	ship defective unit prepaid to...
(800) 668-1717 (English) (800) 668-1748 (French) and request a Repair Order Number. Monday to Friday 8:00 am - 5:00 pm local time	Mark the defective item with the following: <ul style="list-style-type: none"> • assigned repair order number • explanation of the problem. 	Northern Telecom Canada Ltd. Repair Customer Service Group 9300 Trans Canada Highway St. Laurent, Québec H4S 1K5 CANADA

Emergency repair service: USA

This section explains how to contact US emergency repair service.
 A replacement circuit pack is shipped from Nortel within 24 hours of receiving the order.

Call customer service	and...	ship prepaid to...
(800) 251-1758 and request an emergency replacement.	1) Give the following: <ul style="list-style-type: none"> • name • company name • telephone number • exact unit code and name for emergency replacement • ship-to address 2) Mark the defective item with the assigned emergency repair order number	Nortel Networks 917 Air Park Center Dr. Nashville, TN 37217 Attn: Repair and Return

Emergency repair service: Canada

This section explains how to contact Canadian emergency repair service.
 A replacement circuit pack is shipped from Nortel within 24 hours of receiving the order.

Call customer service	and...	ship prepaid to...
Normal business hours Monday to Friday 8:00 am - 5:00 pm local time (800) 668-1717 (English) (800) 668-1748 (French) and request an emergency replacement. All other times: (800) 361-2575 and request an emergency replacement.	1) Give the following: <ul style="list-style-type: none"> • name • company name • telephone number • exact unit code and name for emergency replacement • ship-to address 2) Mark the defective item with the assigned emergency repair order number	Northern Telecom Canada Ltd. Repair Customer Service Group 9300 Trans Canada Highway St. Laurent, Québec H4S 1K5 CANADA

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SONET Products

AccessNode

Series 800A Outside Plant Cabinet Installation

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